

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: P920574

Luminaire Tested: DFN2DIP-SQ4F0-140D100US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920574  
REPORT IS A COMBINATION OF REPORTS P900146 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-140D100US935-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

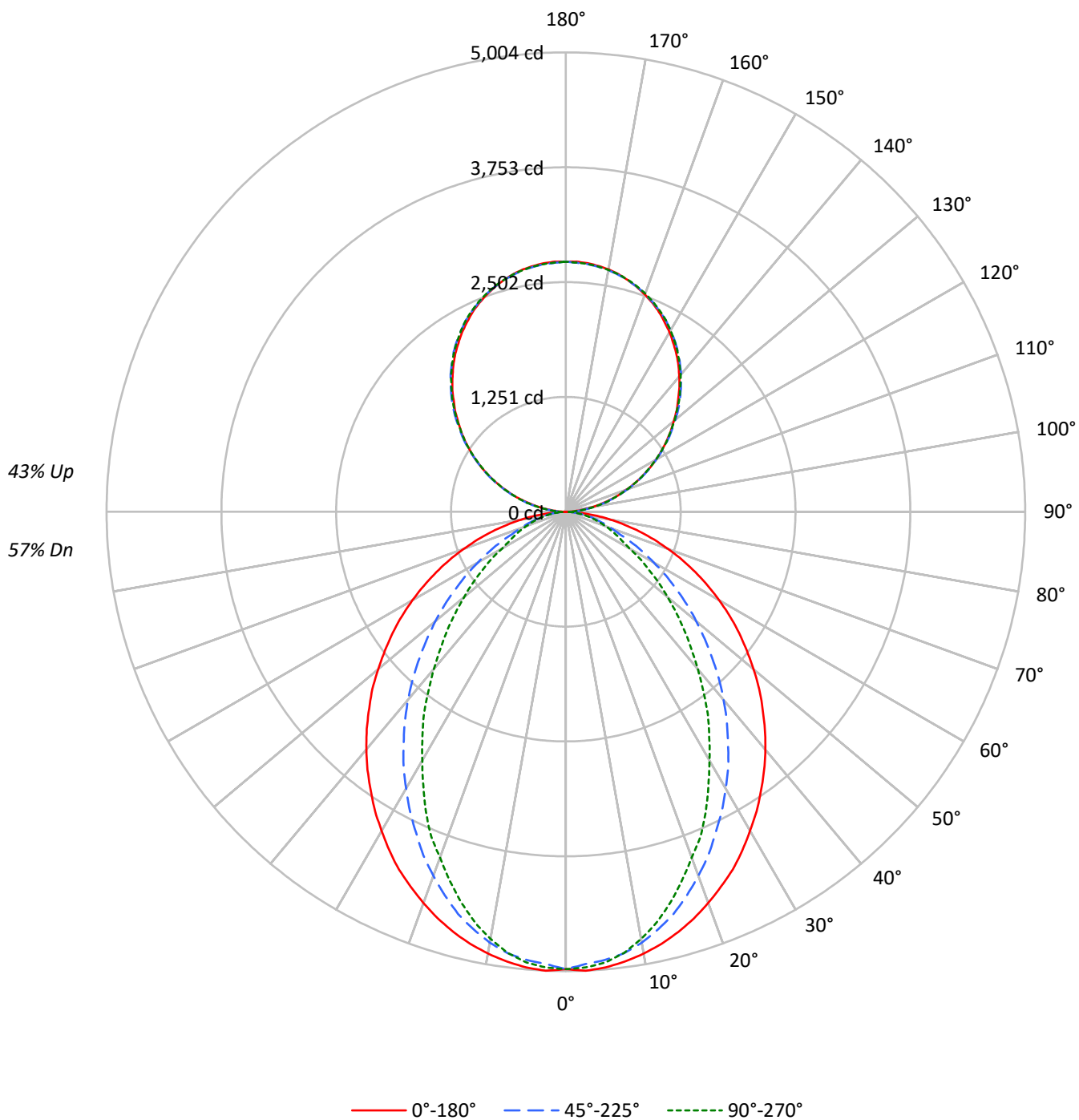
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17865.7 lumens  
Efficiency: N/A  
Efficacy: 81.8 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): 218.5  
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



TEST NUMBER: P920574

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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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 89  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 63 | 56 | 55 | 54 |
| 2   | 92  | 84  | 78  | 73  | 85  | 79  | 74  | 69  | 69 | 65 | 61 | 59 | 56 | 54 | 50 | 48 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 47 | 43 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 34 | 31 | 34 | 30 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 27 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 26  | 46  | 35  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3496 | 3496 | 3496 |
| 5°  | 3501 | 3441 | 3463 |
| 10° | 3467 | 3374 | 3351 |
| 15° | 3419 | 3263 | 3178 |
| 20° | 3356 | 3110 | 2965 |
| 25° | 3291 | 2938 | 2759 |
| 30° | 3204 | 2762 | 2498 |
| 35° | 3119 | 2573 | 2269 |
| 40° | 3032 | 2377 | 2005 |
| 45° | 2932 | 2159 | 1767 |
| 50° | 2828 | 1939 | 1533 |
| 55° | 2719 | 1705 | 1309 |
| 60° | 2593 | 1459 | 1079 |
| 65° | 2449 | 1209 | 972  |
| 70° | 2273 | 976  | 881  |
| 75° | 2053 | 862  | 804  |
| 80° | 1734 | 725  | 701  |
| 85° | 1207 | 488  | 533  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2932 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 466.9   | 2.6       |
| 10°-20°   | 1281.8  | 7.2       |
| 20°-30°   | 1799.5  | 10.1      |
| 30°-40°   | 1961.6  | 11.0      |
| 40°-50°   | 1802.9  | 10.1      |
| 50°-60°   | 1415.9  | 7.9       |
| 60°-70°   | 921.6   | 5.2       |
| 70°-80°   | 474.4   | 2.7       |
| 80°-90°   | 128.9   | 0.7       |
| 90°-100°  | 168.5   | 0.9       |
| 100°-110° | 535.4   | 3.0       |
| 110°-120° | 916.2   | 5.1       |
| 120°-130° | 1204.9  | 6.7       |
| 130°-140° | 1352.5  | 7.6       |
| 140°-150° | 1326.3  | 7.4       |
| 150°-160° | 1112.6  | 6.2       |
| 160°-170° | 737.8   | 4.1       |
| 170°-180° | 257.9   | 1.4       |
| 0°-30°    | 3548.2  | 19.9      |
| 0°-40°    | 5509.8  | 30.8      |
| 0°-60°    | 8728.7  | 48.9      |
| 0°-90°    | 10253.6 | 57.4      |
| 90°-120°  | 1620.1  | 9.1       |
| 90°-150°  | 5503.8  | 30.8      |
| 90°-180°  | 7612.0  | 42.6      |
| 0°-180°   | 17865.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4982 | 4982  | 4982 | 4982  | 4982 |      |
| 5°   | 4982 | 4959  | 4900 | 4941  | 4928 | 472  |
| 15°  | 4738 | 4689  | 4536 | 4450  | 4405 | 1335 |
| 25°  | 4301 | 4157  | 3859 | 3675  | 3607 | 1978 |
| 35°  | 3706 | 3476  | 3080 | 2795  | 2696 | 2320 |
| 45°  | 3030 | 2728  | 2254 | 1934  | 1826 | 2340 |
| 55°  | 2304 | 1952  | 1465 | 1195  | 1109 | 2059 |
| 65°  | 1556 | 1190  | 784  | 631   | 618  | 1542 |
| 75°  | 829  | 514   | 361  | 329   | 325  | 877  |
| 85°  | 194  | 99    | 86   | 86    | 86   | 222  |
| 90°  | 2    | 30    | 80   | 76    | 78   | 18   |
| 95°  | 120  | 143   | 147  | 147   | 143  | 133  |
| 105° | 494  | 501   | 506  | 510   | 510  | 522  |
| 115° | 920  | 932   | 928  | 926   | 920  | 909  |
| 125° | 1337 | 1358  | 1351 | 1344  | 1341 | 1195 |
| 135° | 1730 | 1755  | 1760 | 1758  | 1751 | 1337 |
| 145° | 2100 | 2116  | 2130 | 2132  | 2123 | 1312 |
| 155° | 2401 | 2408  | 2415 | 2427  | 2419 | 1105 |
| 165° | 2612 | 2610  | 2610 | 2626  | 2615 | 737  |
| 175° | 2718 | 2712  | 2707 | 2723  | 2709 | 258  |
| 180° | 2723 | 2723  | 2723 | 2723  | 2723 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4981.9 | 4981.9 | 4981.9 | 4981.9 | 4981.9 |
| 2.5°   | 5004.4 | 4981.9 | 4932.1 | 4977.6 | 4968.5 |
| 5°     | 4981.9 | 4959.4 | 4900.5 | 4941.3 | 4927.8 |
| 7.5°   | 4941.3 | 4914.4 | 4851.3 | 4869.0 | 4846.6 |
| 10°    | 4887.2 | 4855.6 | 4765.7 | 4751.8 | 4725.0 |
| 12.5°  | 4819.7 | 4779.1 | 4657.1 | 4630.3 | 4580.6 |
| 15°    | 4738.4 | 4688.6 | 4535.6 | 4450.0 | 4405.0 |
| 17.5°  | 4643.7 | 4571.5 | 4382.0 | 4283.0 | 4210.8 |
| 20°    | 4535.6 | 4445.2 | 4219.9 | 4107.5 | 4008.0 |
| 22.5°  | 4418.4 | 4314.6 | 4053.0 | 3899.9 | 3832.5 |
| 25°    | 4301.2 | 4156.7 | 3859.3 | 3674.6 | 3606.6 |
| 27.5°  | 4161.5 | 4008.0 | 3678.9 | 3467.0 | 3363.2 |
| 30°    | 4012.8 | 3841.1 | 3480.4 | 3250.8 | 3128.8 |
| 32.5°  | 3868.3 | 3660.7 | 3291.4 | 3020.7 | 2907.8 |
| 35°    | 3706.2 | 3476.1 | 3079.5 | 2795.4 | 2695.9 |
| 37.5°  | 3548.3 | 3300.0 | 2881.0 | 2569.6 | 2457.2 |
| 40°    | 3381.4 | 3111.1 | 2673.4 | 2353.5 | 2236.3 |
| 42.5°  | 3210.1 | 2921.7 | 2466.3 | 2132.4 | 2020.0 |
| 45°    | 3029.8 | 2727.5 | 2254.4 | 1933.9 | 1825.8 |
| 47.5°  | 2858.5 | 2538.6 | 2051.6 | 1731.1 | 1632.1 |
| 50°    | 2669.1 | 2349.1 | 1853.0 | 1541.7 | 1447.4 |
| 52.5°  | 2484.0 | 2145.8 | 1663.6 | 1366.1 | 1280.5 |
| 55°    | 2303.7 | 1952.1 | 1465.2 | 1194.9 | 1109.2 |
| 57.5°  | 2119.0 | 1758.3 | 1289.6 | 1037.1 | 964.8  |
| 60°    | 1929.6 | 1568.9 | 1104.5 | 874.9  | 802.6  |
| 62.5°  | 1745.0 | 1384.3 | 946.7  | 730.4  | 694.6  |
| 65°    | 1555.6 | 1190.1 | 784.5  | 631.4  | 617.5  |
| 67.5°  | 1375.2 | 1009.8 | 631.4  | 554.4  | 541.0  |
| 70°    | 1185.8 | 834.2  | 522.8  | 477.9  | 459.7  |
| 72.5°  | 1005.5 | 671.6  | 437.2  | 401.3  | 392.3  |
| 75°    | 829.4  | 513.8  | 360.7  | 329.1  | 324.8  |
| 77.5°  | 653.9  | 365.0  | 284.1  | 266.0  | 256.8  |
| 80°    | 491.3  | 261.7  | 216.2  | 198.5  | 198.5  |
| 82.5°  | 342.5  | 176.0  | 148.8  | 139.7  | 139.7  |
| 85°    | 193.7  | 99.0   | 85.6   | 85.6   | 85.6   |
| 87.5°  | 72.2   | 35.9   | 35.9   | 31.6   | 31.6   |
| 90°    | 2.5    | 29.5   | 80.4   | 75.5   | 78.0   |
| 92.5°  | 50.9   | 69.0   | 71.5   | 73.9   | 73.9   |
| 95°    | 119.9  | 142.8  | 147.0  | 147.0  | 142.8  |
| 97.5°  | 199.5  | 220.8  | 229.9  | 229.9  | 229.9  |
| 100°   | 291.4  | 310.3  | 316.8  | 316.8  | 314.4  |
| 102.5° | 388.3  | 402.3  | 411.3  | 413.7  | 411.3  |
| 105°   | 494.2  | 500.8  | 505.7  | 509.8  | 509.8  |
| 107.5° | 599.3  | 609.2  | 609.2  | 610.8  | 599.3  |
| 110°   | 701.1  | 714.2  | 714.2  | 714.2  | 707.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 811.1  | 825.0  | 822.6  | 816.0  | 811.1  |
| 115°   | 919.5  | 932.5  | 928.5  | 926.0  | 919.5  |
| 117.5° | 1027.0 | 1045.1 | 1033.5 | 1027.0 | 1020.4 |
| 120°   | 1135.3 | 1153.4 | 1135.3 | 1135.3 | 1128.0 |
| 122.5° | 1233.8 | 1256.8 | 1245.3 | 1238.8 | 1233.8 |
| 125°   | 1337.3 | 1357.8 | 1351.3 | 1343.8 | 1341.4 |
| 127.5° | 1438.3 | 1463.7 | 1454.7 | 1444.8 | 1438.3 |
| 130°   | 1532.7 | 1562.2 | 1558.1 | 1553.2 | 1544.2 |
| 132.5° | 1638.6 | 1661.6 | 1663.2 | 1651.7 | 1645.1 |
| 135°   | 1729.7 | 1755.1 | 1760.1 | 1757.6 | 1751.0 |
| 137.5° | 1831.5 | 1852.0 | 1856.1 | 1854.5 | 1844.6 |
| 140°   | 1921.0 | 1941.5 | 1953.0 | 1953.0 | 1944.0 |
| 142.5° | 2012.9 | 2033.4 | 2040.0 | 2042.5 | 2033.4 |
| 145°   | 2099.9 | 2116.3 | 2129.5 | 2131.9 | 2122.9 |
| 147.5° | 2177.9 | 2198.5 | 2208.3 | 2212.4 | 2203.4 |
| 150°   | 2258.4 | 2272.3 | 2281.4 | 2288.7 | 2281.4 |
| 152.5° | 2329.8 | 2343.7 | 2355.3 | 2364.3 | 2355.3 |
| 155°   | 2401.2 | 2407.8 | 2415.2 | 2426.6 | 2419.2 |
| 157.5° | 2462.8 | 2467.7 | 2471.8 | 2488.2 | 2476.7 |
| 160°   | 2517.8 | 2522.7 | 2525.1 | 2539.1 | 2529.3 |
| 162.5° | 2568.7 | 2568.7 | 2571.1 | 2586.7 | 2575.2 |
| 165°   | 2612.2 | 2609.7 | 2609.7 | 2626.1 | 2614.7 |
| 167.5° | 2651.6 | 2644.2 | 2644.2 | 2660.7 | 2649.1 |
| 170°   | 2681.1 | 2674.6 | 2672.1 | 2688.6 | 2674.6 |
| 172.5° | 2701.6 | 2695.1 | 2692.6 | 2709.0 | 2695.1 |
| 175°   | 2718.1 | 2711.5 | 2706.6 | 2723.0 | 2709.0 |
| 177.5° | 2727.1 | 2720.6 | 2715.6 | 2729.5 | 2715.6 |
| 180°   | 2723.0 | 2723.0 | 2723.0 | 2723.0 | 2723.0 |

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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 | 12.17            | 13.06 | 13.07 | 13.98 | 15.14 | 8.13           | 9.03  | 9.03  | 9.94  | 11.10 |
|                 | 3H   | 13.86            | 14.66 | 14.77 | 15.58 | 16.77 | 9.33           | 10.13 | 10.24 | 11.05 | 12.24 |
|                 | 4H   | 14.47            | 15.23 | 15.40 | 16.15 | 17.35 | 9.78           | 10.53 | 10.70 | 11.46 | 12.66 |
|                 | 6H   | 14.90            | 15.60 | 15.84 | 16.53 | 17.74 | 10.10          | 10.80 | 11.04 | 11.73 | 12.94 |
|                 | 8H   | 15.03            | 15.69 | 15.97 | 16.64 | 17.85 | 10.20          | 10.86 | 11.14 | 11.81 | 13.02 |
|                 | 12H  | 15.10            | 15.73 | 16.05 | 16.67 | 17.90 | 10.24          | 10.87 | 11.19 | 11.82 | 13.05 |
| 4H              | 2H   | 12.20            | 12.95 | 13.13 | 13.88 | 15.08 | 8.74           | 9.49  | 9.67  | 10.42 | 11.62 |
|                 | 3H   | 14.04            | 14.66 | 14.98 | 15.62 | 16.84 | 10.09          | 10.72 | 11.03 | 11.68 | 12.89 |
|                 | 4H   | 14.73            | 15.31 | 15.68 | 16.26 | 17.50 | 10.65          | 11.22 | 11.60 | 12.17 | 13.41 |
|                 | 6H   | 15.26            | 15.75 | 16.22 | 16.73 | 17.96 | 11.07          | 11.56 | 12.03 | 12.54 | 13.78 |
|                 | 8H   | 15.44            | 15.90 | 16.40 | 16.87 | 18.12 | 11.20          | 11.66 | 12.17 | 12.63 | 13.88 |
|                 | 12H  | 15.54            | 15.95 | 16.52 | 16.94 | 18.20 | 11.27          | 11.68 | 12.25 | 12.67 | 13.93 |
| 8H              | 4H   | 14.71            | 15.17 | 15.67 | 16.14 | 17.39 | 10.93          | 11.39 | 11.90 | 12.36 | 13.61 |
|                 | 6H   | 15.28            | 15.66 | 16.27 | 16.67 | 17.92 | 11.45          | 11.83 | 12.45 | 12.85 | 14.10 |
|                 | 8H   | 15.50            | 15.83 | 16.50 | 16.84 | 18.10 | 11.65          | 11.98 | 12.65 | 12.98 | 14.25 |
|                 | 12H  | 15.64            | 15.94 | 16.65 | 16.93 | 18.25 | 11.77          | 12.06 | 12.77 | 13.06 | 14.37 |
| 12H             | 4H   | 14.66            | 15.08 | 15.65 | 16.06 | 17.32 | 10.94          | 11.36 | 11.93 | 12.34 | 13.60 |
|                 | 6H   | 15.26            | 15.59 | 16.26 | 16.59 | 17.86 | 11.51          | 11.84 | 12.50 | 12.84 | 14.11 |
|                 | 8H   | 15.48            | 15.78 | 16.48 | 16.77 | 18.09 | 11.72          | 12.01 | 12.72 | 13.01 | 14.32 |