

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: P916930

Luminaire Tested: DFN2DIP-PN4F0-080D040US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916930  
REPORT IS A COMBINATION OF REPORTS P899618 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-080D040US930-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

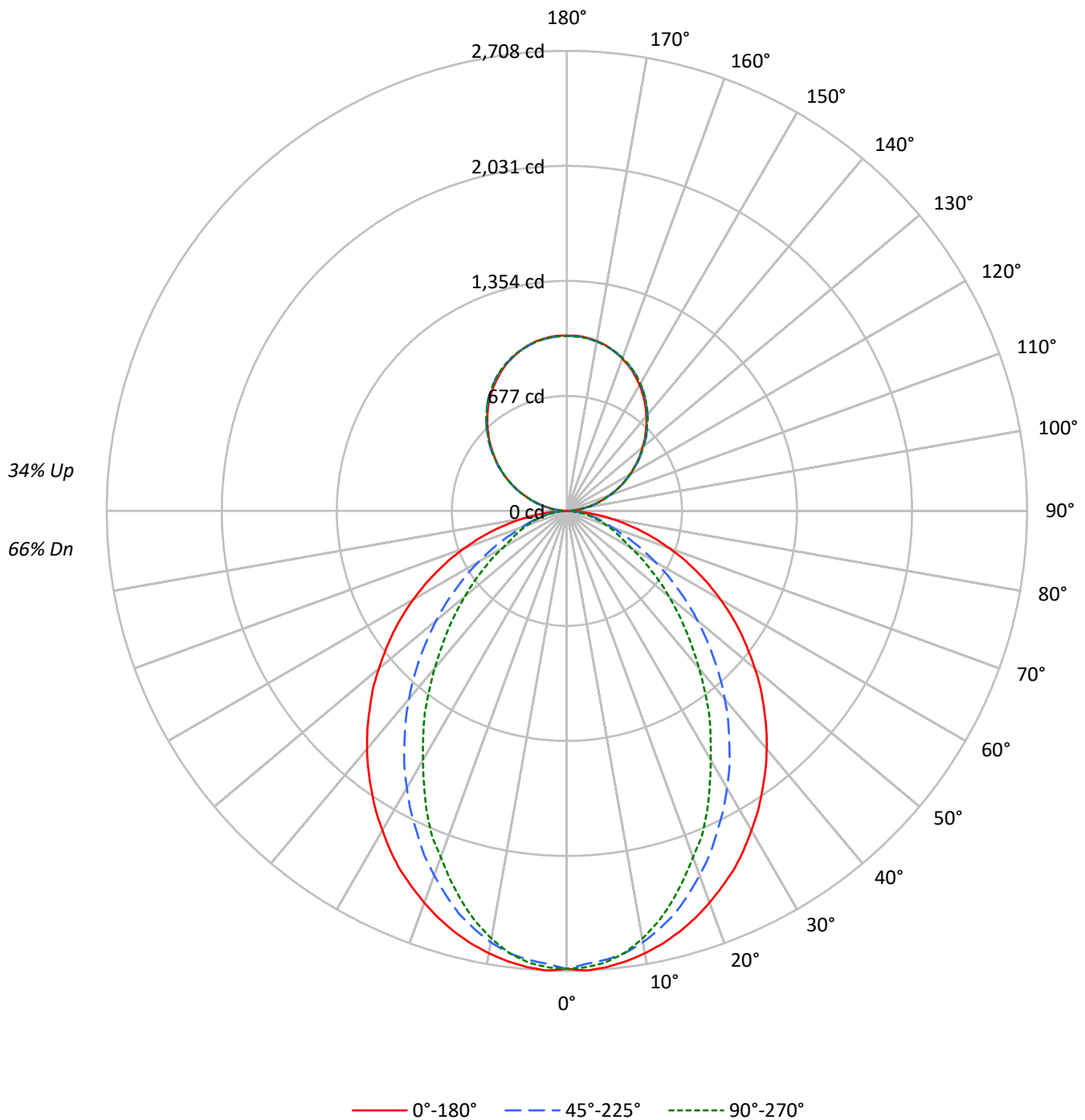
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8430.2 lumens  
Efficiency: N/A  
Efficacy: 78.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 107.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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: P916930

CATALOG NUMBER: DFN2DIP-PN4F0-080D040US930-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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 81 | 81 | 81 | 71 | 71 | 71 |
| 1   | 102 | 98  | 94  | 91  | 96  | 92  | 89  | 86  | 82 | 79 | 77 | 72 | 70 | 69 | 63 | 62 | 61 |
| 2   | 93  | 86  | 80  | 75  | 88  | 81  | 76  | 72  | 72 | 68 | 65 | 64 | 61 | 58 | 57 | 54 | 52 |
| 3   | 86  | 76  | 69  | 63  | 80  | 72  | 66  | 61  | 65 | 59 | 55 | 57 | 53 | 50 | 51 | 48 | 45 |
| 4   | 79  | 68  | 60  | 54  | 74  | 65  | 58  | 52  | 58 | 52 | 48 | 52 | 47 | 44 | 46 | 42 | 40 |
| 5   | 73  | 61  | 53  | 47  | 68  | 58  | 51  | 45  | 52 | 46 | 42 | 47 | 42 | 38 | 42 | 38 | 35 |
| 6   | 67  | 55  | 47  | 41  | 63  | 52  | 45  | 40  | 47 | 41 | 37 | 42 | 38 | 34 | 38 | 34 | 31 |
| 7   | 62  | 50  | 42  | 37  | 59  | 48  | 40  | 35  | 43 | 37 | 33 | 39 | 34 | 30 | 35 | 31 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 29 | 36 | 31 | 27 | 32 | 28 | 25 |
| 9   | 54  | 42  | 35  | 29  | 51  | 40  | 33  | 29  | 36 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 31  | 27  | 48  | 37  | 30  | 26  | 34 | 28 | 24 | 31 | 26 | 23 | 28 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1968 | 1968 | 1968 |
| 5°  | 1971 | 1937 | 1949 |
| 10° | 1951 | 1899 | 1886 |
| 15° | 1924 | 1837 | 1788 |
| 20° | 1889 | 1750 | 1668 |
| 25° | 1853 | 1653 | 1553 |
| 30° | 1804 | 1554 | 1405 |
| 35° | 1756 | 1448 | 1276 |
| 40° | 1707 | 1337 | 1128 |
| 45° | 1650 | 1214 | 993  |
| 50° | 1592 | 1091 | 862  |
| 55° | 1531 | 959  | 736  |
| 60° | 1460 | 820  | 606  |
| 65° | 1379 | 679  | 546  |
| 70° | 1280 | 548  | 495  |
| 75° | 1156 | 484  | 451  |
| 80° | 977  | 407  | 392  |
| 85° | 680  | 273  | 297  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1650 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 252.6  | 3.0       |
| 10°-20°   | 693.6  | 8.2       |
| 20°-30°   | 973.7  | 11.6      |
| 30°-40°   | 1061.4 | 12.6      |
| 40°-50°   | 975.6  | 11.6      |
| 50°-60°   | 766.2  | 9.1       |
| 60°-70°   | 498.7  | 5.9       |
| 70°-80°   | 256.7  | 3.0       |
| 80°-90°   | 68.5   | 0.8       |
| 90°-100°  | 63.8   | 0.8       |
| 100°-110° | 202.8  | 2.4       |
| 110°-120° | 347.0  | 4.1       |
| 120°-130° | 456.4  | 5.4       |
| 130°-140° | 512.3  | 6.1       |
| 140°-150° | 502.4  | 6.0       |
| 150°-160° | 421.4  | 5.0       |
| 160°-170° | 279.5  | 3.3       |
| 170°-180° | 97.7   | 1.2       |
| 0°-30°    | 1919.9 | 22.8      |
| 0°-40°    | 2981.4 | 35.4      |
| 0°-60°    | 4723.1 | 56.0      |
| 0°-90°    | 5547.0 | 65.8      |
| 90°-120°  | 613.6  | 7.3       |
| 90°-150°  | 2084.7 | 24.7      |
| 90°-180°  | 2883.0 | 34.2      |
| 0°-180°   | 8430.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2696 | 2696  | 2696 | 2696  | 2696 |      |
| 5°   | 2696 | 2684  | 2652 | 2674  | 2666 | 256  |
| 15°  | 2564 | 2537  | 2454 | 2408  | 2384 | 722  |
| 25°  | 2327 | 2249  | 2088 | 1988  | 1952 | 1070 |
| 35°  | 2005 | 1881  | 1666 | 1513  | 1459 | 1255 |
| 45°  | 1639 | 1476  | 1220 | 1046  | 988  | 1266 |
| 55°  | 1246 | 1056  | 793  | 646   | 600  | 1114 |
| 65°  | 842  | 644   | 424  | 342   | 334  | 834  |
| 75°  | 449  | 278   | 195  | 178   | 176  | 475  |
| 85°  | 105  | 54    | 46   | 46    | 46   | 120  |
| 90°  | 1    | 11    | 30   | 29    | 30   | 8    |
| 95°  | 45   | 54    | 56   | 56    | 54   | 51   |
| 105° | 187  | 190   | 192  | 193   | 193  | 198  |
| 115° | 348  | 353   | 352  | 351   | 348  | 344  |
| 125° | 506  | 514   | 512  | 509   | 508  | 453  |
| 135° | 655  | 665   | 667  | 666   | 663  | 506  |
| 145° | 795  | 802   | 807  | 808   | 804  | 497  |
| 155° | 910  | 912   | 915  | 919   | 916  | 419  |
| 165° | 989  | 988   | 988  | 995   | 990  | 279  |
| 175° | 1030 | 1027  | 1025 | 1031  | 1026 | 98   |
| 180° | 1031 | 1031  | 1031 | 1031  | 1031 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2695.7 | 2695.7 | 2695.7 | 2695.7 | 2695.7 |
| 2.5°   | 2707.9 | 2695.7 | 2668.8 | 2693.3 | 2688.4 |
| 5°     | 2695.7 | 2683.6 | 2651.7 | 2673.7 | 2666.4 |
| 7.5°   | 2673.7 | 2659.2 | 2625.0 | 2634.6 | 2622.4 |
| 10°    | 2644.4 | 2627.4 | 2578.7 | 2571.2 | 2556.7 |
| 12.5°  | 2608.0 | 2586.0 | 2519.9 | 2505.4 | 2478.5 |
| 15°    | 2563.9 | 2537.0 | 2454.2 | 2407.9 | 2383.5 |
| 17.5°  | 2512.7 | 2473.6 | 2371.1 | 2317.6 | 2278.4 |
| 20°    | 2454.2 | 2405.3 | 2283.4 | 2222.6 | 2168.7 |
| 22.5°  | 2390.8 | 2334.6 | 2193.1 | 2110.2 | 2073.7 |
| 25°    | 2327.4 | 2249.2 | 2088.2 | 1988.3 | 1951.6 |
| 27.5°  | 2251.8 | 2168.7 | 1990.6 | 1876.0 | 1819.8 |
| 30°    | 2171.3 | 2078.4 | 1883.3 | 1759.0 | 1693.0 |
| 32.5°  | 2093.1 | 1980.8 | 1781.0 | 1634.5 | 1573.4 |
| 35°    | 2005.4 | 1880.9 | 1666.3 | 1512.6 | 1458.7 |
| 37.5°  | 1919.9 | 1785.7 | 1558.9 | 1390.4 | 1329.6 |
| 40°    | 1829.7 | 1683.4 | 1446.6 | 1273.4 | 1210.0 |
| 42.5°  | 1737.0 | 1580.9 | 1334.5 | 1153.9 | 1093.0 |
| 45°    | 1639.4 | 1475.9 | 1219.8 | 1046.4 | 988.0  |
| 47.5°  | 1546.8 | 1373.6 | 1110.1 | 936.7  | 883.1  |
| 50°    | 1444.2 | 1271.1 | 1002.7 | 834.2  | 783.2  |
| 52.5°  | 1344.1 | 1161.1 | 900.2  | 739.2  | 692.9  |
| 55°    | 1246.5 | 1056.3 | 792.8  | 646.5  | 600.2  |
| 57.5°  | 1146.6 | 951.5  | 697.8  | 561.2  | 522.0  |
| 60°    | 1044.1 | 849.0  | 597.6  | 473.4  | 434.3  |
| 62.5°  | 944.2  | 749.0  | 512.3  | 395.3  | 375.9  |
| 65°    | 841.7  | 643.9  | 424.4  | 341.7  | 334.1  |
| 67.5°  | 744.1  | 546.4  | 341.7  | 299.9  | 292.8  |
| 70°    | 641.6  | 451.4  | 282.9  | 258.5  | 248.7  |
| 72.5°  | 544.0  | 363.4  | 236.6  | 217.2  | 212.2  |
| 75°    | 448.8  | 278.0  | 195.2  | 178.1  | 175.8  |
| 77.5°  | 353.8  | 197.5  | 153.8  | 143.9  | 139.0  |
| 80°    | 265.8  | 141.6  | 117.0  | 107.4  | 107.4  |
| 82.5°  | 185.3  | 95.2   | 80.5   | 75.6   | 75.6   |
| 85°    | 104.8  | 53.6   | 46.3   | 46.3   | 46.3   |
| 87.5°  | 39.1   | 19.4   | 19.4   | 17.1   | 17.1   |
| 90°    | 0.9    | 11.2   | 30.5   | 28.6   | 29.5   |
| 92.5°  | 19.2   | 26.1   | 27.1   | 28.0   | 28.0   |
| 95°    | 45.4   | 54.1   | 55.7   | 55.7   | 54.1   |
| 97.5°  | 75.6   | 83.6   | 87.1   | 87.1   | 87.1   |
| 100°   | 110.4  | 117.6  | 120.0  | 120.0  | 119.1  |
| 102.5° | 147.1  | 152.4  | 155.8  | 156.7  | 155.8  |
| 105°   | 187.2  | 189.6  | 191.5  | 193.1  | 193.1  |
| 107.5° | 227.0  | 230.7  | 230.7  | 231.3  | 227.0  |
| 110°   | 265.5  | 270.5  | 270.5  | 270.5  | 268.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 307.2  | 312.5  | 311.5  | 309.1  | 307.2  |
| 115°   | 348.2  | 353.3  | 351.6  | 350.7  | 348.2  |
| 117.5° | 389.0  | 395.8  | 391.5  | 389.0  | 386.5  |
| 120°   | 430.1  | 436.8  | 430.1  | 430.1  | 427.2  |
| 122.5° | 467.3  | 476.1  | 471.7  | 469.2  | 467.3  |
| 125°   | 506.5  | 514.3  | 511.8  | 509.0  | 508.1  |
| 127.5° | 544.8  | 554.4  | 551.0  | 547.2  | 544.8  |
| 130°   | 580.5  | 591.7  | 590.2  | 588.3  | 584.9  |
| 132.5° | 620.6  | 629.3  | 630.0  | 625.6  | 623.1  |
| 135°   | 655.2  | 664.8  | 666.7  | 665.7  | 663.2  |
| 137.5° | 693.7  | 701.5  | 703.0  | 702.4  | 698.7  |
| 140°   | 727.6  | 735.4  | 739.7  | 739.7  | 736.3  |
| 142.5° | 762.5  | 770.2  | 772.7  | 773.6  | 770.2  |
| 145°   | 795.4  | 801.6  | 806.6  | 807.6  | 804.1  |
| 147.5° | 824.9  | 832.7  | 836.4  | 838.0  | 834.5  |
| 150°   | 855.4  | 860.7  | 864.1  | 866.9  | 864.1  |
| 152.5° | 882.5  | 887.7  | 892.1  | 895.5  | 892.1  |
| 155°   | 909.5  | 912.0  | 914.8  | 919.2  | 916.3  |
| 157.5° | 932.9  | 934.7  | 936.2  | 942.5  | 938.1  |
| 160°   | 953.7  | 955.5  | 956.4  | 961.7  | 958.0  |
| 162.5° | 972.9  | 972.9  | 973.9  | 979.7  | 975.4  |
| 165°   | 989.4  | 988.5  | 988.5  | 994.7  | 990.3  |
| 167.5° | 1004.4 | 1001.5 | 1001.5 | 1007.8 | 1003.4 |
| 170°   | 1015.5 | 1013.0 | 1012.1 | 1018.3 | 1013.0 |
| 172.5° | 1023.3 | 1020.8 | 1019.9 | 1026.1 | 1020.8 |
| 175°   | 1029.6 | 1027.0 | 1025.2 | 1031.4 | 1026.1 |
| 177.5° | 1033.0 | 1030.5 | 1028.6 | 1033.9 | 1028.6 |
| 180°   | 1031.4 | 1031.4 | 1031.4 | 1031.4 | 1031.4 |

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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 | 10.87            | 11.84 | 11.68 | 12.68 | 13.71 | 6.83           | 7.81  | 7.65  | 8.64  | 9.67  |
|                 | 3H   | 12.56            | 13.43 | 13.39 | 14.28 | 15.33 | 8.03           | 8.91  | 8.86  | 9.75  | 10.81 |
|                 | 4H   | 13.18            | 14.00 | 14.02 | 14.85 | 15.92 | 8.49           | 9.31  | 9.34  | 10.16 | 11.23 |
|                 | 6H   | 13.61            | 14.37 | 14.46 | 15.22 | 16.31 | 8.82           | 9.58  | 9.68  | 10.44 | 11.52 |
|                 | 8H   | 13.74            | 14.46 | 14.61 | 15.34 | 16.42 | 8.91           | 9.64  | 9.78  | 10.51 | 11.59 |
|                 | 12H  | 13.81            | 14.49 | 14.68 | 15.36 | 16.47 | 8.96           | 9.65  | 9.83  | 10.52 | 11.63 |
| 4H              | 2H   | 10.90            | 11.73 | 11.75 | 12.58 | 13.65 | 7.45           | 8.27  | 8.30  | 9.12  | 10.19 |
|                 | 3H   | 12.75            | 13.43 | 13.61 | 14.32 | 15.40 | 8.81           | 9.50  | 9.67  | 10.38 | 11.46 |
|                 | 4H   | 13.45            | 14.07 | 14.32 | 14.95 | 16.06 | 9.37           | 9.99  | 10.24 | 10.87 | 11.98 |
|                 | 6H   | 13.97            | 14.51 | 14.86 | 15.42 | 16.53 | 9.79           | 10.33 | 10.68 | 11.23 | 12.35 |
|                 | 8H   | 14.15            | 14.66 | 15.05 | 15.55 | 16.68 | 9.93           | 10.43 | 10.82 | 11.33 | 12.45 |
|                 | 12H  | 14.26            | 14.71 | 15.17 | 15.63 | 16.76 | 10.00          | 10.45 | 10.91 | 11.37 | 12.50 |
| 8H              | 4H   | 13.43            | 13.93 | 14.32 | 14.83 | 15.95 | 9.66           | 10.16 | 10.55 | 11.06 | 12.18 |
|                 | 6H   | 14.00            | 14.42 | 14.92 | 15.36 | 16.48 | 10.18          | 10.60 | 11.10 | 11.54 | 12.66 |
|                 | 8H   | 14.22            | 14.59 | 15.15 | 15.52 | 16.66 | 10.38          | 10.74 | 11.30 | 11.68 | 12.82 |
|                 | 12H  | 14.37            | 14.69 | 15.30 | 15.62 | 16.81 | 10.50          | 10.83 | 11.43 | 11.75 | 12.95 |
| 12H             | 4H   | 13.39            | 13.84 | 14.30 | 14.75 | 15.89 | 9.67           | 10.12 | 10.58 | 11.04 | 12.17 |
|                 | 6H   | 13.98            | 14.34 | 14.91 | 15.28 | 16.42 | 10.23          | 10.60 | 11.16 | 11.53 | 12.68 |
|                 | 8H   | 14.21            | 14.53 | 15.14 | 15.46 | 16.65 | 10.45          | 10.77 | 11.38 | 11.70 | 12.90 |