

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: P902325

Luminaire Tested: DFN2DIP-4P4F0-050D030US830-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P902325
REPORT IS A COMBINATION OF REPORTS P900604 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-050D030US830-RLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

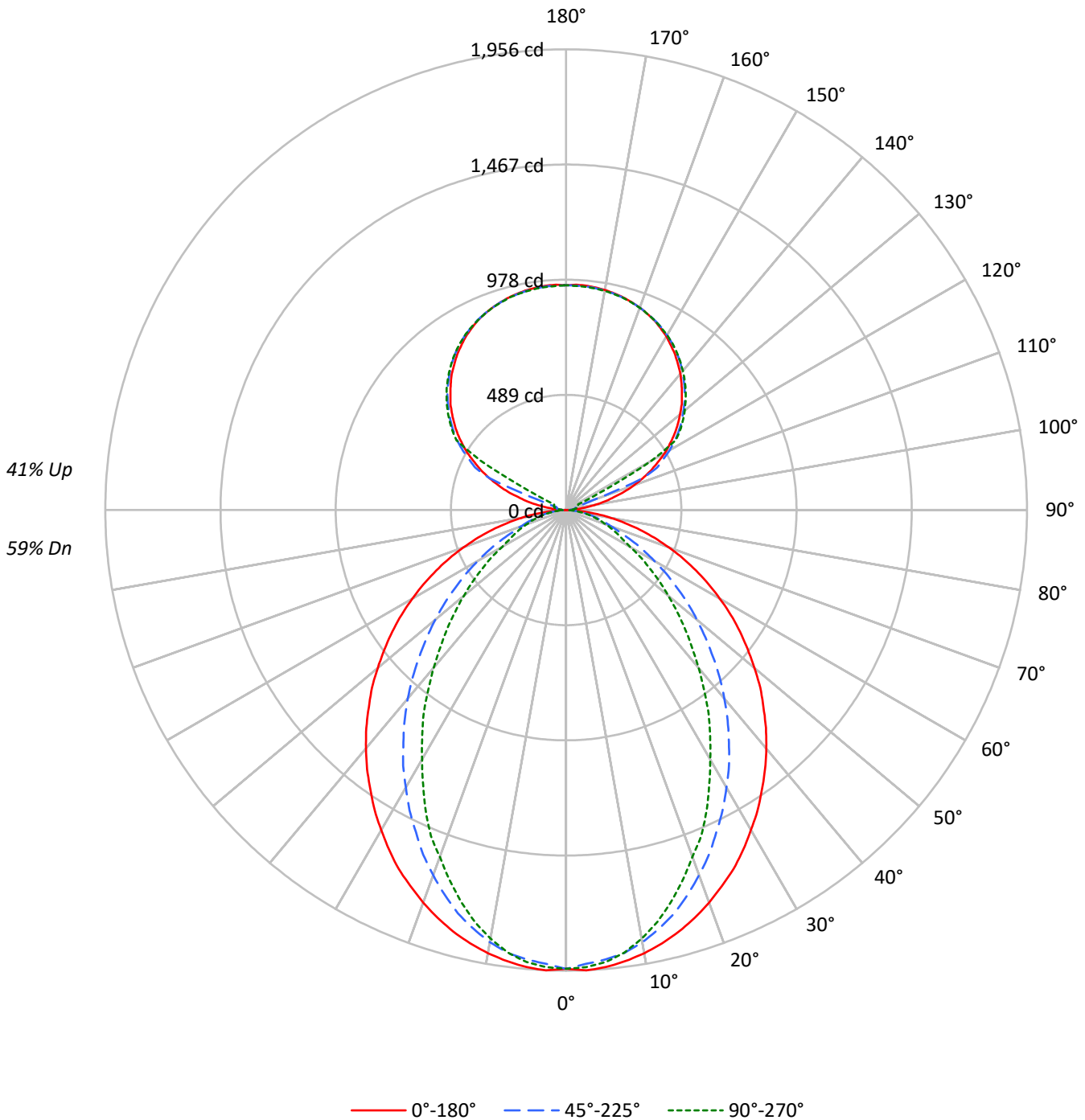
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6805.2 lumens
Efficiency: N/A
Efficacy: 93.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 73.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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: P902325
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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|--|----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | | 0 |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | | 0 |
| RCR | | | | | | | | | | | | | | | | | | | |
| 0 | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 | | 59 |
| 1 | 100 | 96 | 92 | 89 | 94 | 90 | 87 | 84 | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 55 | | 51 |
| 2 | 92 | 85 | 79 | 74 | 86 | 79 | 74 | 70 | 69 | 65 | 62 | 60 | 57 | 55 | 51 | 49 | 48 | | 43 |
| 3 | 84 | 75 | 68 | 62 | 78 | 70 | 64 | 59 | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 43 | 41 | | 37 |
| 4 | 77 | 67 | 59 | 53 | 72 | 63 | 56 | 51 | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 | | 33 |
| 5 | 71 | 60 | 52 | 46 | 66 | 56 | 49 | 44 | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 | | 29 |
| 6 | 66 | 54 | 46 | 40 | 61 | 51 | 44 | 38 | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 | | 26 |
| 7 | 61 | 49 | 41 | 36 | 57 | 46 | 39 | 34 | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 | | 23 |
| 8 | 57 | 45 | 37 | 32 | 53 | 42 | 35 | 30 | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 | | 21 |
| 9 | 53 | 41 | 34 | 29 | 50 | 39 | 32 | 27 | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 21 | | 19 |
| 10 | 50 | 38 | 31 | 26 | 46 | 36 | 29 | 25 | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 | | 17 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1264 | 1264 | 1264 |
| 5° | 1266 | 1244 | 1252 |
| 10° | 1253 | 1220 | 1212 |
| 15° | 1236 | 1180 | 1149 |
| 20° | 1213 | 1125 | 1072 |
| 25° | 1190 | 1063 | 998 |
| 30° | 1159 | 999 | 903 |
| 35° | 1128 | 931 | 821 |
| 40° | 1097 | 860 | 725 |
| 45° | 1061 | 782 | 639 |
| 50° | 1023 | 702 | 555 |
| 55° | 984 | 617 | 474 |
| 60° | 939 | 528 | 391 |
| 65° | 887 | 438 | 352 |
| 70° | 824 | 354 | 319 |
| 75° | 745 | 313 | 292 |
| 80° | 630 | 264 | 254 |
| 85° | 441 | 179 | 195 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1061 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 182.5 | 2.7 |
| 10°-20° | 501.1 | 7.4 |
| 20°-30° | 703.6 | 10.3 |
| 30°-40° | 766.9 | 11.3 |
| 40°-50° | 704.9 | 10.4 |
| 50°-60° | 553.6 | 8.1 |
| 60°-70° | 360.3 | 5.3 |
| 70°-80° | 185.5 | 2.7 |
| 80°-90° | 49.0 | 0.7 |
| 90°-100° | 31.5 | 0.5 |
| 100°-110° | 117.3 | 1.7 |
| 110°-120° | 311.1 | 4.6 |
| 120°-130° | 516.0 | 7.6 |
| 130°-140° | 548.1 | 8.1 |
| 140°-150° | 509.4 | 7.5 |
| 150°-160° | 409.6 | 6.0 |
| 160°-170° | 263.9 | 3.9 |
| 170°-180° | 90.8 | 1.3 |
| 0°-30° | 1387.2 | 20.4 |
| 0°-40° | 2154.2 | 31.7 |
| 0°-60° | 3412.7 | 50.1 |
| 0°-90° | 4007.5 | 58.9 |
| 90°-120° | 459.9 | 6.8 |
| 90°-150° | 2033.4 | 29.9 |
| 90°-180° | 2798.0 | 41.1 |
| 0°-180° | 6805.2 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1948 | 1948 | 1948 | 1948 | 1948 | |
| 5° | 1948 | 1939 | 1916 | 1932 | 1927 | 185 |
| 15° | 1853 | 1833 | 1773 | 1740 | 1722 | 522 |
| 25° | 1682 | 1625 | 1509 | 1437 | 1410 | 773 |
| 35° | 1449 | 1359 | 1204 | 1093 | 1054 | 907 |
| 45° | 1185 | 1066 | 881 | 756 | 714 | 915 |
| 55° | 901 | 763 | 573 | 467 | 434 | 805 |
| 65° | 608 | 465 | 307 | 247 | 242 | 603 |
| 75° | 324 | 201 | 141 | 129 | 127 | 343 |
| 85° | 76 | 39 | 34 | 34 | 34 | 87 |
| 90° | 1 | 8 | 14 | 17 | 19 | 6 |
| 95° | 45 | 22 | 27 | 30 | 30 | 53 |
| 105° | 210 | 231 | 42 | 50 | 52 | 224 |
| 115° | 397 | 409 | 426 | 106 | 57 | 391 |
| 125° | 561 | 570 | 584 | 588 | 590 | 501 |
| 135° | 695 | 706 | 712 | 719 | 718 | 537 |
| 145° | 806 | 805 | 817 | 822 | 818 | 504 |
| 155° | 887 | 881 | 889 | 894 | 888 | 409 |
| 165° | 935 | 931 | 933 | 938 | 933 | 264 |
| 175° | 956 | 952 | 953 | 958 | 951 | 91 |
| 180° | 954 | 954 | 954 | 954 | 954 | |



TEST NUMBER: P902325

CATALOG NUMBER: DFN2DIP-4P4F0-050D030US830-RLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1947.8 | 1947.8 | 1947.8 | 1947.8 | 1947.8 |
| 2.5° | 1956.5 | 1947.8 | 1928.3 | 1946.1 | 1942.5 |
| 5° | 1947.8 | 1939.0 | 1916.0 | 1931.8 | 1926.7 |
| 7.5° | 1931.8 | 1921.4 | 1896.7 | 1903.7 | 1894.8 |
| 10° | 1910.7 | 1898.4 | 1863.2 | 1857.8 | 1847.3 |
| 12.5° | 1884.3 | 1868.5 | 1820.8 | 1810.3 | 1790.8 |
| 15° | 1852.6 | 1833.2 | 1773.3 | 1739.8 | 1722.2 |
| 17.5° | 1815.5 | 1787.3 | 1713.3 | 1674.5 | 1646.2 |
| 20° | 1773.3 | 1738.0 | 1649.8 | 1605.9 | 1567.0 |
| 22.5° | 1727.5 | 1686.9 | 1584.6 | 1524.8 | 1498.4 |
| 25° | 1681.6 | 1625.1 | 1508.8 | 1436.6 | 1410.0 |
| 27.5° | 1627.0 | 1567.0 | 1438.3 | 1355.5 | 1314.9 |
| 30° | 1568.9 | 1501.8 | 1360.7 | 1270.9 | 1223.2 |
| 32.5° | 1512.4 | 1431.3 | 1286.9 | 1181.0 | 1136.9 |
| 35° | 1449.0 | 1359.1 | 1204.0 | 1092.9 | 1054.0 |
| 37.5° | 1387.2 | 1290.2 | 1126.4 | 1004.7 | 960.7 |
| 40° | 1322.0 | 1216.4 | 1045.2 | 920.1 | 874.3 |
| 42.5° | 1255.1 | 1142.3 | 964.2 | 833.7 | 789.8 |
| 45° | 1184.6 | 1066.4 | 881.4 | 756.1 | 713.8 |
| 47.5° | 1117.6 | 992.5 | 802.1 | 676.8 | 638.1 |
| 50° | 1043.6 | 918.4 | 724.5 | 602.8 | 565.9 |
| 52.5° | 971.2 | 839.0 | 650.4 | 534.1 | 500.7 |
| 55° | 900.7 | 763.2 | 572.8 | 467.1 | 433.7 |
| 57.5° | 828.5 | 687.5 | 504.2 | 405.5 | 377.2 |
| 60° | 754.4 | 613.4 | 431.8 | 342.0 | 313.8 |
| 62.5° | 682.2 | 541.2 | 370.1 | 285.6 | 271.5 |
| 65° | 608.1 | 465.3 | 306.7 | 246.9 | 241.5 |
| 67.5° | 537.6 | 394.8 | 246.9 | 216.8 | 211.5 |
| 70° | 463.6 | 326.1 | 204.4 | 186.8 | 179.7 |
| 72.5° | 393.1 | 262.6 | 171.0 | 156.9 | 153.4 |
| 75° | 324.3 | 200.9 | 141.0 | 128.7 | 127.0 |
| 77.5° | 255.6 | 142.7 | 111.1 | 104.0 | 100.4 |
| 80° | 192.1 | 102.3 | 84.5 | 77.6 | 77.6 |
| 82.5° | 133.9 | 68.8 | 58.2 | 54.6 | 54.6 |
| 85° | 75.8 | 38.7 | 33.5 | 33.5 | 33.5 |
| 87.5° | 28.3 | 14.0 | 14.0 | 12.3 | 12.3 |
| 90° | 0.7 | 8.3 | 13.8 | 17.3 | 18.6 |
| 92.5° | 17.3 | 14.5 | 16.6 | 18.0 | 18.6 |
| 95° | 44.9 | 22.1 | 26.9 | 30.4 | 29.7 |
| 97.5° | 80.8 | 24.2 | 35.2 | 37.3 | 38.0 |
| 100° | 122.2 | 27.6 | 39.4 | 44.9 | 46.3 |
| 102.5° | 167.8 | 166.5 | 40.7 | 48.3 | 50.4 |
| 105° | 209.9 | 230.6 | 42.1 | 49.7 | 52.5 |
| 107.5° | 258.9 | 276.2 | 43.5 | 51.1 | 53.9 |
| 110° | 305.9 | 320.4 | 120.8 | 51.8 | 54.6 |



TEST NUMBER: P902325

CATALOG NUMBER: DFN2DIP-4P4F0-050D030US830-RLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 350.2 | 362.5 | 350.8 | 53.2 | 55.2 |
| 115° | 397.0 | 408.8 | 426.0 | 106.3 | 56.6 |
| 117.5° | 437.8 | 451.6 | 463.4 | 364.6 | 183.7 |
| 120° | 483.3 | 493.7 | 506.1 | 514.4 | 421.2 |
| 122.5° | 522.0 | 533.1 | 547.0 | 551.0 | 551.8 |
| 125° | 561.4 | 570.3 | 583.5 | 588.3 | 590.4 |
| 127.5° | 597.3 | 606.9 | 617.4 | 624.2 | 624.9 |
| 130° | 631.1 | 642.2 | 649.8 | 657.3 | 656.8 |
| 132.5° | 665.6 | 674.7 | 682.2 | 688.4 | 687.8 |
| 135° | 694.7 | 705.8 | 711.9 | 718.9 | 717.5 |
| 137.5° | 725.0 | 733.3 | 740.3 | 747.2 | 745.1 |
| 140° | 754.7 | 760.3 | 767.8 | 774.0 | 770.6 |
| 142.5° | 779.7 | 784.5 | 793.4 | 798.9 | 795.5 |
| 145° | 805.9 | 805.1 | 816.9 | 821.7 | 818.2 |
| 147.5° | 828.6 | 826.5 | 838.3 | 841.7 | 839.0 |
| 150° | 850.7 | 845.9 | 857.0 | 861.0 | 857.6 |
| 152.5° | 869.3 | 863.8 | 874.2 | 878.4 | 873.5 |
| 155° | 887.3 | 881.2 | 889.4 | 893.5 | 888.1 |
| 157.5° | 901.8 | 896.4 | 902.6 | 907.4 | 901.8 |
| 160° | 914.3 | 910.1 | 914.3 | 918.4 | 913.5 |
| 162.5° | 925.3 | 921.1 | 924.6 | 929.4 | 923.2 |
| 165° | 934.9 | 930.9 | 932.9 | 937.7 | 932.9 |
| 167.5° | 942.5 | 938.4 | 940.5 | 945.4 | 939.1 |
| 170° | 948.8 | 944.6 | 946.0 | 950.8 | 944.6 |
| 172.5° | 952.9 | 948.8 | 950.2 | 955.0 | 948.8 |
| 175° | 956.3 | 951.5 | 952.9 | 957.7 | 950.8 |
| 177.5° | 957.7 | 952.9 | 953.7 | 958.5 | 952.3 |
| 180° | 954.3 | 954.3 | 954.3 | 954.3 | 954.3 |



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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 | 8.77 | 9.68 | 9.66 | 10.58 | 11.72 | 4.73 | 5.64 | 5.62 | 6.54 | 7.68 |
| | 3H | 10.46 | 11.27 | 11.36 | 12.18 | 13.35 | 5.93 | 6.74 | 6.82 | 7.65 | 8.82 |
| | 4H | 11.08 | 11.84 | 11.99 | 12.76 | 13.93 | 6.38 | 7.15 | 7.30 | 8.06 | 9.24 |
| | 6H | 11.51 | 12.21 | 12.43 | 13.13 | 14.32 | 6.71 | 7.42 | 7.63 | 8.34 | 9.53 |
| | 8H | 11.64 | 12.31 | 12.57 | 13.25 | 14.44 | 6.80 | 7.47 | 7.73 | 8.41 | 9.60 |
| | 12H | 11.70 | 12.34 | 12.64 | 13.28 | 14.49 | 6.85 | 7.49 | 7.79 | 8.42 | 9.63 |
| 4H | 2H | 8.80 | 9.57 | 9.72 | 10.48 | 11.66 | 5.34 | 6.11 | 6.26 | 7.02 | 8.20 |
| | 3H | 10.64 | 11.28 | 11.57 | 12.22 | 13.42 | 6.70 | 7.34 | 7.63 | 8.28 | 9.47 |
| | 4H | 11.34 | 11.92 | 12.28 | 12.86 | 14.08 | 7.25 | 7.83 | 8.19 | 8.77 | 9.99 |
| | 6H | 11.87 | 12.37 | 12.82 | 13.33 | 14.55 | 7.68 | 8.18 | 8.63 | 9.14 | 10.36 |
| | 8H | 12.05 | 12.51 | 13.00 | 13.47 | 14.70 | 7.81 | 8.28 | 8.76 | 9.23 | 10.46 |
| | 12H | 12.15 | 12.57 | 13.12 | 13.54 | 14.78 | 7.88 | 8.30 | 8.85 | 9.27 | 10.51 |
| 8H | 4H | 11.32 | 11.78 | 12.27 | 12.74 | 13.97 | 7.54 | 8.01 | 8.49 | 8.97 | 10.20 |
| | 6H | 11.89 | 12.28 | 12.87 | 13.28 | 14.50 | 8.07 | 8.45 | 9.04 | 9.45 | 10.68 |
| | 8H | 12.11 | 12.45 | 13.10 | 13.44 | 14.69 | 8.26 | 8.60 | 9.25 | 9.59 | 10.84 |
| | 12H | 12.26 | 12.56 | 13.25 | 13.54 | 14.83 | 8.38 | 8.68 | 9.37 | 9.66 | 10.96 |
| 12H | 4H | 11.27 | 11.69 | 12.24 | 12.67 | 13.90 | 7.55 | 7.97 | 8.52 | 8.95 | 10.18 |
| | 6H | 11.87 | 12.21 | 12.85 | 13.20 | 14.44 | 8.12 | 8.46 | 9.10 | 9.45 | 10.69 |
| | 8H | 12.09 | 12.39 | 13.08 | 13.38 | 14.67 | 8.33 | 8.63 | 9.32 | 9.61 | 10.91 |