

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: P918649

Luminaire Tested: DFN2DIP-4P4F0-030D040US935-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P918649
REPORT IS A COMBINATION OF REPORTS P900612 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-030D040US935-RLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

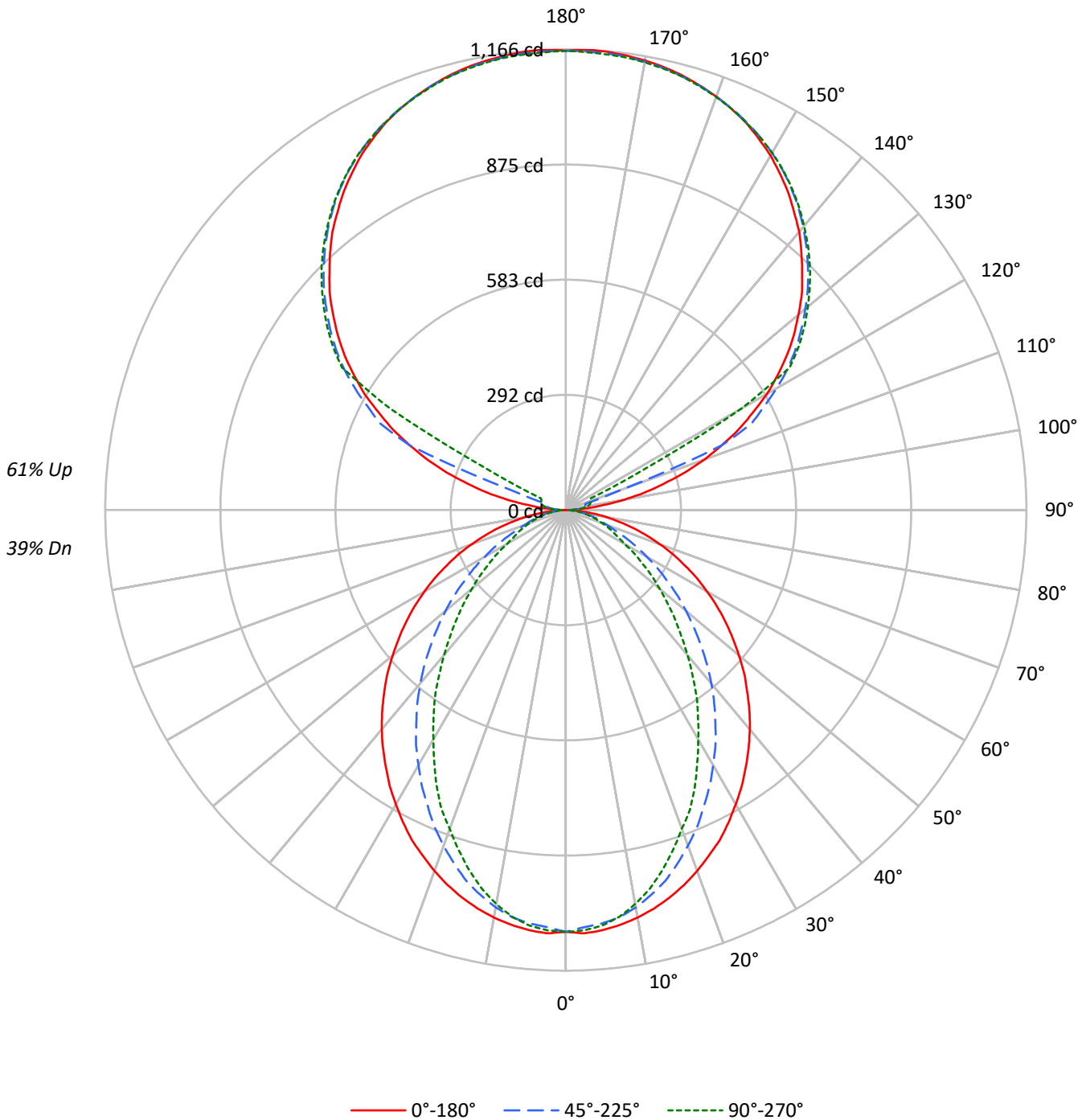
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5605.0 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: 4.07' x L: 4.07' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 58.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
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: P918649

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF | 20 | | | | 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 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 | 39 | | | |
| 1 | 96 | 92 | 88 | 85 | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 52 | 41 | 41 | 40 | 34 | | | |
| 2 | 87 | 80 | 75 | 70 | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 | 29 | | | |
| 3 | 80 | 71 | 64 | 58 | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 | 25 | | | |
| 4 | 73 | 63 | 55 | 50 | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 | 22 | | | |
| 5 | 67 | 56 | 48 | 43 | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 25 | 23 | 19 | | | |
| 6 | 62 | 51 | 43 | 37 | 56 | 46 | 40 | 35 | 39 | 34 | 30 | 31 | 28 | 25 | 25 | 22 | 20 | 17 | | | |
| 7 | 57 | 46 | 38 | 33 | 52 | 42 | 35 | 31 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 | 15 | | | |
| 8 | 53 | 42 | 34 | 29 | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 | 14 | | | |
| 9 | 50 | 38 | 31 | 26 | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 | 12 | | | |
| 10 | 46 | 35 | 28 | 23 | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 | 11 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-----|-----|-----|
| 0° | 693 | 693 | 693 |
| 5° | 694 | 682 | 686 |
| 10° | 687 | 669 | 664 |
| 15° | 678 | 647 | 630 |
| 20° | 665 | 616 | 588 |
| 25° | 652 | 583 | 547 |
| 30° | 635 | 548 | 495 |
| 35° | 618 | 510 | 450 |
| 40° | 601 | 471 | 398 |
| 45° | 581 | 428 | 350 |
| 50° | 561 | 385 | 304 |
| 55° | 539 | 338 | 260 |
| 60° | 515 | 290 | 214 |
| 65° | 486 | 240 | 193 |
| 70° | 452 | 194 | 175 |
| 75° | 408 | 172 | 160 |
| 80° | 345 | 145 | 139 |
| 85° | 241 | 98 | 106 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 597 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 100.1 | 1.8 |
| 10°-20° | 274.7 | 4.9 |
| 20°-30° | 385.6 | 6.9 |
| 30°-40° | 420.3 | 7.5 |
| 40°-50° | 386.3 | 6.9 |
| 50°-60° | 303.4 | 5.4 |
| 60°-70° | 197.5 | 3.5 |
| 70°-80° | 101.7 | 1.8 |
| 80°-90° | 28.0 | 0.5 |
| 90°-100° | 38.3 | 0.7 |
| 100°-110° | 142.9 | 2.5 |
| 110°-120° | 378.9 | 6.8 |
| 120°-130° | 628.5 | 11.2 |
| 130°-140° | 667.6 | 11.9 |
| 140°-150° | 620.4 | 11.1 |
| 150°-160° | 498.8 | 8.9 |
| 160°-170° | 321.4 | 5.7 |
| 170°-180° | 110.6 | 2.0 |
| 0°-30° | 760.3 | 13.6 |
| 0°-40° | 1180.7 | 21.1 |
| 0°-60° | 1870.4 | 33.4 |
| 0°-90° | 2197.6 | 39.2 |
| 90°-120° | 560.1 | 10.0 |
| 90°-150° | 2476.6 | 44.2 |
| 90°-180° | 3407.0 | 60.8 |
| 0°-180° | 5605.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1068 | 1068 | 1068 | 1068 | 1068 | |
| 5° | 1068 | 1063 | 1050 | 1059 | 1056 | 101 |
| 15° | 1015 | 1005 | 972 | 954 | 944 | 286 |
| 25° | 922 | 891 | 827 | 787 | 773 | 424 |
| 35° | 794 | 745 | 660 | 599 | 578 | 497 |
| 45° | 649 | 584 | 483 | 414 | 391 | 501 |
| 55° | 494 | 418 | 314 | 256 | 238 | 441 |
| 65° | 333 | 255 | 168 | 135 | 132 | 330 |
| 75° | 178 | 110 | 77 | 70 | 70 | 188 |
| 85° | 42 | 21 | 18 | 18 | 18 | 48 |
| 90° | 1 | 10 | 17 | 21 | 23 | 5 |
| 95° | 55 | 27 | 33 | 37 | 36 | 65 |
| 105° | 256 | 281 | 51 | 60 | 64 | 273 |
| 115° | 484 | 498 | 519 | 130 | 69 | 476 |
| 125° | 684 | 695 | 711 | 717 | 719 | 610 |
| 135° | 846 | 860 | 867 | 876 | 874 | 654 |
| 145° | 982 | 981 | 995 | 1001 | 997 | 614 |
| 155° | 1081 | 1073 | 1083 | 1088 | 1082 | 498 |
| 165° | 1139 | 1134 | 1136 | 1142 | 1136 | 322 |
| 175° | 1165 | 1159 | 1161 | 1166 | 1158 | 111 |
| 180° | 1162 | 1162 | 1162 | 1162 | 1162 | |



TEST NUMBER: P918649

CATALOG NUMBER: DFN2DIP-4P4F0-030D040US935-RLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1067.6 | 1067.6 | 1067.6 | 1067.6 | 1067.6 |
| 2.5° | 1072.4 | 1067.6 | 1056.9 | 1066.6 | 1064.7 |
| 5° | 1067.6 | 1062.7 | 1050.2 | 1058.9 | 1055.9 |
| 7.5° | 1058.9 | 1053.1 | 1039.6 | 1043.4 | 1038.5 |
| 10° | 1047.2 | 1040.5 | 1021.2 | 1018.2 | 1012.5 |
| 12.5° | 1032.8 | 1024.1 | 998.0 | 992.2 | 981.5 |
| 15° | 1015.4 | 1004.7 | 971.9 | 953.6 | 943.9 |
| 17.5° | 995.1 | 979.6 | 939.0 | 917.8 | 902.3 |
| 20° | 971.9 | 952.5 | 904.2 | 880.2 | 858.8 |
| 22.5° | 946.8 | 924.5 | 868.5 | 835.7 | 821.2 |
| 25° | 921.7 | 890.7 | 827.0 | 787.4 | 772.8 |
| 27.5° | 891.7 | 858.8 | 788.3 | 743.0 | 720.7 |
| 30° | 859.9 | 823.1 | 745.8 | 696.6 | 670.5 |
| 32.5° | 828.9 | 784.5 | 705.3 | 647.3 | 623.1 |
| 35° | 794.2 | 744.8 | 659.9 | 599.0 | 577.7 |
| 37.5° | 760.3 | 707.1 | 617.3 | 550.6 | 526.6 |
| 40° | 724.6 | 666.7 | 572.9 | 504.3 | 479.2 |
| 42.5° | 687.9 | 626.1 | 528.5 | 456.9 | 432.8 |
| 45° | 649.3 | 584.4 | 483.1 | 414.4 | 391.2 |
| 47.5° | 612.5 | 544.0 | 439.6 | 370.9 | 349.7 |
| 50° | 572.0 | 503.3 | 397.1 | 330.4 | 310.1 |
| 52.5° | 532.3 | 459.9 | 356.5 | 292.7 | 274.4 |
| 55° | 493.6 | 418.3 | 313.9 | 256.1 | 237.7 |
| 57.5° | 454.1 | 376.8 | 276.4 | 222.2 | 206.7 |
| 60° | 413.5 | 336.2 | 236.7 | 187.4 | 172.0 |
| 62.5° | 373.9 | 296.6 | 202.9 | 156.5 | 148.9 |
| 65° | 333.3 | 255.0 | 168.1 | 135.3 | 132.3 |
| 67.5° | 294.7 | 216.4 | 135.3 | 118.8 | 115.9 |
| 70° | 254.1 | 178.7 | 112.0 | 102.4 | 98.5 |
| 72.5° | 215.4 | 143.9 | 93.7 | 86.0 | 84.0 |
| 75° | 177.7 | 110.1 | 77.3 | 70.5 | 69.6 |
| 77.5° | 140.1 | 78.2 | 60.9 | 57.0 | 55.0 |
| 80° | 105.3 | 56.1 | 46.3 | 42.5 | 42.5 |
| 82.5° | 73.4 | 37.7 | 31.9 | 30.0 | 30.0 |
| 85° | 41.5 | 21.2 | 18.3 | 18.3 | 18.3 |
| 87.5° | 15.5 | 7.7 | 7.7 | 6.8 | 6.8 |
| 90° | 0.8 | 10.1 | 16.8 | 21.1 | 22.6 |
| 92.5° | 21.1 | 17.7 | 20.1 | 21.9 | 22.6 |
| 95° | 54.6 | 26.9 | 32.7 | 37.0 | 36.2 |
| 97.5° | 98.4 | 29.4 | 42.9 | 45.5 | 46.2 |
| 100° | 148.9 | 33.7 | 48.0 | 54.6 | 56.3 |
| 102.5° | 204.3 | 202.8 | 49.6 | 58.8 | 61.4 |
| 105° | 255.6 | 280.9 | 51.3 | 60.5 | 63.9 |
| 107.5° | 315.4 | 336.4 | 53.0 | 62.3 | 65.6 |
| 110° | 372.6 | 390.2 | 147.2 | 63.1 | 66.4 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 426.5 | 441.5 | 427.2 | 64.7 | 67.3 |
| 115° | 483.5 | 497.8 | 518.9 | 129.5 | 69.1 |
| 117.5° | 533.2 | 550.0 | 564.4 | 444.0 | 223.7 |
| 120° | 588.8 | 601.3 | 616.5 | 626.6 | 513.1 |
| 122.5° | 635.8 | 649.3 | 666.2 | 671.1 | 672.0 |
| 125° | 683.7 | 694.7 | 710.7 | 716.6 | 719.1 |
| 127.5° | 727.5 | 739.3 | 751.9 | 760.3 | 761.1 |
| 130° | 768.7 | 782.2 | 791.3 | 800.6 | 799.9 |
| 132.5° | 810.7 | 821.7 | 830.9 | 838.5 | 837.8 |
| 135° | 846.1 | 859.6 | 867.1 | 875.5 | 873.9 |
| 137.5° | 883.0 | 893.1 | 901.6 | 910.0 | 907.5 |
| 140° | 919.2 | 926.0 | 935.2 | 942.8 | 938.6 |
| 142.5° | 949.6 | 955.4 | 966.4 | 973.0 | 968.9 |
| 145° | 981.5 | 980.7 | 994.9 | 1000.8 | 996.6 |
| 147.5° | 1009.2 | 1006.7 | 1021.0 | 1025.2 | 1021.9 |
| 150° | 1036.1 | 1030.3 | 1043.8 | 1048.8 | 1044.6 |
| 152.5° | 1058.9 | 1052.1 | 1064.7 | 1069.8 | 1063.9 |
| 155° | 1080.7 | 1073.2 | 1083.3 | 1088.3 | 1081.6 |
| 157.5° | 1098.4 | 1091.7 | 1099.3 | 1105.2 | 1098.4 |
| 160° | 1113.5 | 1108.4 | 1113.5 | 1118.5 | 1112.7 |
| 162.5° | 1127.0 | 1122.0 | 1126.2 | 1132.0 | 1124.5 |
| 165° | 1138.8 | 1133.8 | 1136.3 | 1142.1 | 1136.3 |
| 167.5° | 1148.1 | 1142.9 | 1145.6 | 1151.4 | 1143.8 |
| 170° | 1155.6 | 1150.6 | 1152.2 | 1158.1 | 1150.6 |
| 172.5° | 1160.6 | 1155.6 | 1157.4 | 1163.2 | 1155.6 |
| 175° | 1164.8 | 1158.9 | 1160.6 | 1166.5 | 1158.1 |
| 177.5° | 1166.5 | 1160.6 | 1161.5 | 1167.4 | 1159.9 |
| 180° | 1162.3 | 1162.3 | 1162.3 | 1162.3 | 1162.3 |



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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 | 4.79 | 5.54 | 5.84 | 6.59 | 8.01 | 0.75 | 1.50 | 1.80 | 2.55 | 3.97 |
| | 3H | 6.47 | 7.14 | 7.53 | 8.20 | 9.64 | 1.94 | 2.60 | 3.00 | 3.66 | 5.10 |
| | 4H | 7.08 | 7.71 | 8.15 | 8.77 | 10.22 | 2.38 | 3.02 | 3.45 | 4.08 | 5.52 |
| | 6H | 7.50 | 8.08 | 8.58 | 9.15 | 10.61 | 2.70 | 3.28 | 3.78 | 4.35 | 5.81 |
| | 8H | 7.63 | 8.18 | 8.71 | 9.26 | 10.71 | 2.79 | 3.35 | 3.88 | 4.43 | 5.88 |
| | 12H | 7.69 | 8.21 | 8.78 | 9.29 | 10.76 | 2.83 | 3.36 | 3.92 | 4.43 | 5.91 |
| 4H | 2H | 4.80 | 5.43 | 5.88 | 6.50 | 7.94 | 1.34 | 1.97 | 2.42 | 3.04 | 4.48 |
| | 3H | 6.63 | 7.16 | 7.71 | 8.24 | 9.70 | 2.68 | 3.21 | 3.77 | 4.30 | 5.76 |
| | 4H | 7.32 | 7.80 | 8.41 | 8.88 | 10.36 | 3.23 | 3.71 | 4.32 | 4.79 | 6.27 |
| | 6H | 7.84 | 8.25 | 8.94 | 9.35 | 10.83 | 3.65 | 4.06 | 4.75 | 5.16 | 6.64 |
| | 8H | 8.01 | 8.40 | 9.11 | 9.50 | 10.98 | 3.78 | 4.16 | 4.88 | 5.26 | 6.75 |
| | 12H | 8.11 | 8.46 | 9.22 | 9.57 | 11.06 | 3.84 | 4.19 | 4.95 | 5.30 | 6.79 |
| 8H | 4H | 7.28 | 7.67 | 8.38 | 8.77 | 10.25 | 3.51 | 3.90 | 4.61 | 4.99 | 6.48 |
| | 6H | 7.85 | 8.17 | 8.97 | 9.31 | 10.79 | 4.03 | 4.35 | 5.15 | 5.48 | 6.97 |
| | 8H | 8.07 | 8.35 | 9.20 | 9.47 | 10.98 | 4.22 | 4.50 | 5.35 | 5.62 | 7.12 |
| | 12H | 8.21 | 8.46 | 9.34 | 9.57 | 11.12 | 4.34 | 4.58 | 5.47 | 5.70 | 7.24 |
| 12H | 4H | 7.23 | 7.58 | 8.35 | 8.69 | 10.18 | 3.51 | 3.86 | 4.63 | 4.97 | 6.46 |
| | 6H | 7.83 | 8.11 | 8.95 | 9.23 | 10.73 | 4.08 | 4.36 | 5.20 | 5.48 | 6.98 |
| | 8H | 8.05 | 8.29 | 9.18 | 9.41 | 10.95 | 4.29 | 4.53 | 5.42 | 5.65 | 7.19 |