

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: P924006

Luminaire Tested: DFN2DIP-4P3F0-020D040US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P924006
REPORT IS A COMBINATION OF REPORTS P899049 AND P895917
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P3F0-020D040US950-FLLFLL
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

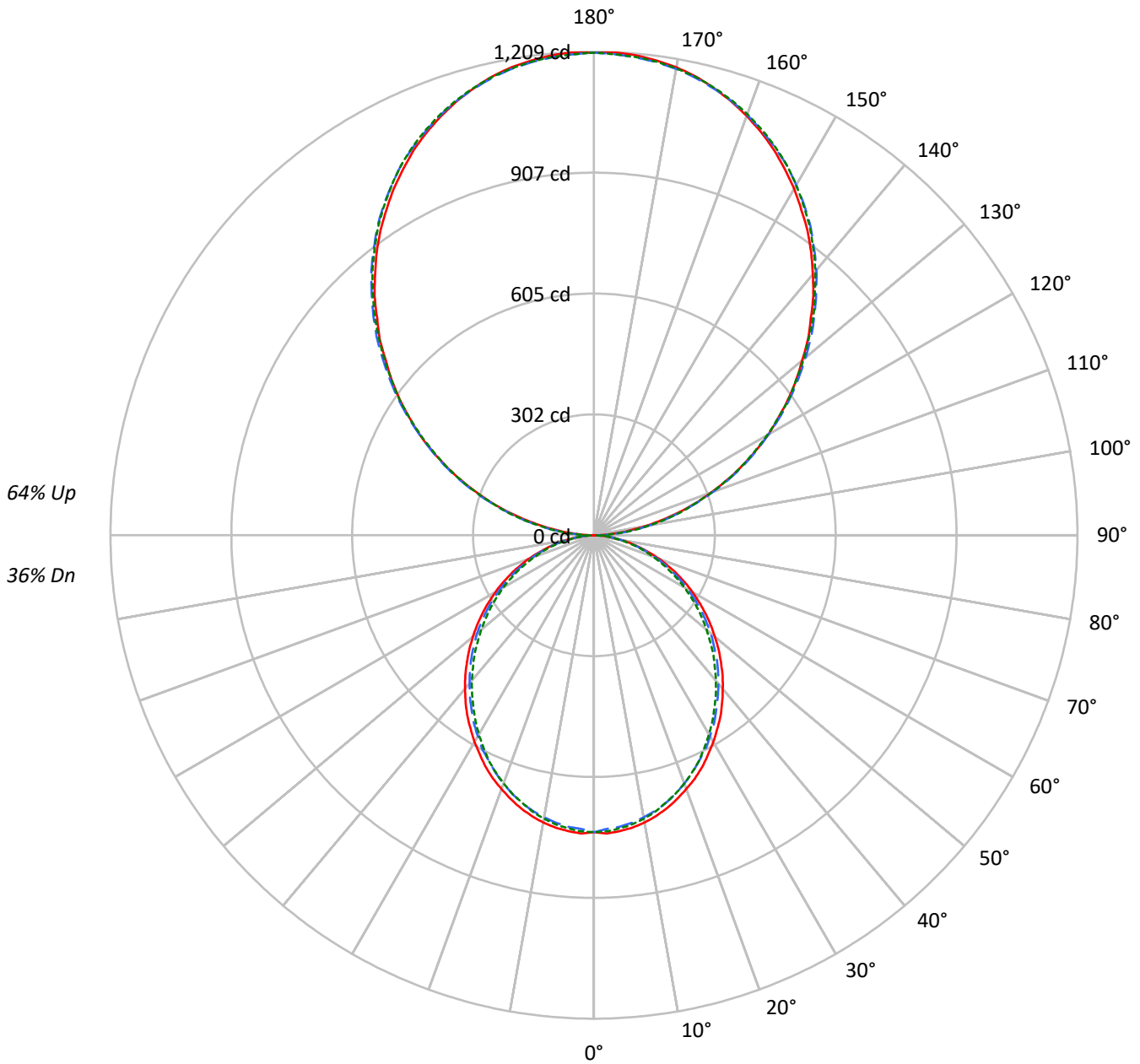
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5266.1 lumens
Efficiency: N/A
Efficacy: 116.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 45.4
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

TEST NUMBER: P924006
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



TEST NUMBER: P924006

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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 | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 43 | 43 | 43 | 36 | | | | 36 |
| 1 | 95 | 90 | 87 | 83 | 85 | 82 | 79 | 76 | 66 | 64 | 62 | 52 | 50 | 49 | 38 | 37 | 36 | 30 | | | | 30 |
| 2 | 86 | 79 | 73 | 68 | 78 | 72 | 66 | 62 | 58 | 54 | 51 | 45 | 43 | 41 | 34 | 32 | 31 | 25 | | | | 25 |
| 3 | 79 | 69 | 62 | 56 | 71 | 63 | 57 | 52 | 51 | 47 | 43 | 40 | 37 | 34 | 30 | 28 | 26 | 21 | | | | 21 |
| 4 | 72 | 61 | 54 | 48 | 65 | 56 | 49 | 44 | 45 | 40 | 37 | 36 | 32 | 29 | 27 | 24 | 22 | 18 | | | | 18 |
| 5 | 66 | 54 | 47 | 41 | 59 | 50 | 43 | 38 | 40 | 35 | 31 | 32 | 28 | 25 | 24 | 22 | 20 | 16 | | | | 16 |
| 6 | 61 | 49 | 41 | 35 | 55 | 45 | 38 | 33 | 36 | 31 | 27 | 29 | 25 | 22 | 22 | 19 | 17 | 14 | | | | 14 |
| 7 | 56 | 44 | 36 | 31 | 50 | 40 | 33 | 28 | 33 | 28 | 24 | 26 | 22 | 20 | 20 | 17 | 15 | 12 | | | | 12 |
| 8 | 52 | 40 | 32 | 27 | 47 | 36 | 30 | 25 | 30 | 25 | 21 | 24 | 20 | 17 | 18 | 16 | 14 | 11 | | | | 11 |
| 9 | 48 | 36 | 29 | 24 | 44 | 33 | 27 | 22 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 14 | 12 | 10 | | | | 10 |
| 10 | 45 | 33 | 26 | 21 | 41 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 17 | 14 | 16 | 13 | 11 | 9 | | | | 9 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-----|-----|-----|
| 0° | 846 | 846 | 846 |
| 5° | 847 | 834 | 840 |
| 10° | 839 | 822 | 828 |
| 15° | 827 | 808 | 810 |
| 20° | 809 | 788 | 792 |
| 25° | 792 | 765 | 770 |
| 30° | 771 | 744 | 743 |
| 35° | 751 | 719 | 715 |
| 40° | 726 | 693 | 687 |
| 45° | 701 | 668 | 660 |
| 50° | 674 | 641 | 628 |
| 55° | 645 | 609 | 598 |
| 60° | 613 | 573 | 564 |
| 65° | 578 | 535 | 524 |
| 70° | 533 | 488 | 480 |
| 75° | 471 | 432 | 440 |
| 80° | 396 | 361 | 363 |
| 85° | 278 | 239 | 238 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1208 cd/sqm



TEST NUMBER: P924006

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 69.9 | 1.3 |
| 10°-20° | 196.6 | 3.7 |
| 20°-30° | 288.9 | 5.5 |
| 30°-40° | 335.6 | 6.4 |
| 40°-50° | 335.2 | 6.4 |
| 50°-60° | 292.2 | 5.5 |
| 60°-70° | 216.0 | 4.1 |
| 70°-80° | 122.2 | 2.3 |
| 80°-90° | 35.7 | 0.7 |
| 90°-100° | 74.7 | 1.4 |
| 100°-110° | 237.3 | 4.5 |
| 110°-120° | 406.1 | 7.7 |
| 120°-130° | 534.0 | 10.1 |
| 130°-140° | 599.4 | 11.4 |
| 140°-150° | 587.8 | 11.2 |
| 150°-160° | 493.1 | 9.4 |
| 160°-170° | 327.0 | 6.2 |
| 170°-180° | 114.3 | 2.2 |
| 0°-30° | 555.4 | 10.5 |
| 0°-40° | 891.0 | 16.9 |
| 0°-60° | 1518.4 | 28.8 |
| 0°-90° | 1892.4 | 35.9 |
| 90°-120° | 718.0 | 13.6 |
| 90°-150° | 2439.3 | 46.3 |
| 90°-180° | 3374.0 | 64.1 |
| 0°-180° | 5266.1 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 742 | 742 | 742 | 742 | 742 | |
| 5° | 742 | 740 | 732 | 737 | 736 | 70 |
| 15° | 707 | 702 | 693 | 696 | 692 | 199 |
| 25° | 640 | 634 | 622 | 623 | 622 | 294 |
| 35° | 552 | 545 | 533 | 529 | 525 | 345 |
| 45° | 449 | 444 | 433 | 426 | 423 | 347 |
| 55° | 340 | 336 | 327 | 318 | 315 | 304 |
| 65° | 229 | 225 | 218 | 211 | 208 | 227 |
| 75° | 120 | 119 | 115 | 111 | 112 | 128 |
| 85° | 29 | 28 | 28 | 26 | 25 | 33 |
| 90° | 1 | 13 | 36 | 34 | 34 | 5 |
| 95° | 53 | 63 | 65 | 65 | 63 | 59 |
| 105° | 219 | 222 | 224 | 226 | 226 | 231 |
| 115° | 408 | 413 | 412 | 410 | 408 | 403 |
| 125° | 593 | 602 | 599 | 596 | 594 | 530 |
| 135° | 767 | 778 | 780 | 779 | 776 | 593 |
| 145° | 931 | 938 | 944 | 945 | 941 | 582 |
| 155° | 1064 | 1067 | 1070 | 1076 | 1072 | 490 |
| 165° | 1158 | 1157 | 1157 | 1164 | 1159 | 327 |
| 175° | 1205 | 1202 | 1200 | 1207 | 1201 | 114 |
| 180° | 1207 | 1207 | 1207 | 1207 | 1207 | |



TEST NUMBER: P924006

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US950-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 0° | 742.4 | 742.4 | 742.4 | 742.4 | 742.4 |
| 2.5° | 746.7 | 743.2 | 735.2 | 742.4 | 741.1 |
| 5° | 742.4 | 739.6 | 731.7 | 737.4 | 736.0 |
| 7.5° | 737.4 | 733.1 | 725.3 | 731.1 | 729.6 |
| 10° | 729.6 | 724.7 | 716.1 | 721.7 | 719.6 |
| 12.5° | 718.8 | 714.6 | 706.1 | 709.6 | 708.2 |
| 15° | 706.7 | 702.5 | 693.2 | 696.0 | 692.5 |
| 17.5° | 691.7 | 687.5 | 678.2 | 681.7 | 678.2 |
| 20° | 675.3 | 671.0 | 661.0 | 663.2 | 660.4 |
| 22.5° | 658.9 | 652.5 | 643.2 | 643.2 | 641.8 |
| 25° | 639.7 | 633.9 | 621.8 | 623.2 | 621.8 |
| 27.5° | 618.2 | 613.2 | 604.0 | 601.9 | 598.3 |
| 30° | 596.8 | 591.1 | 580.4 | 578.3 | 575.4 |
| 32.5° | 573.9 | 569.7 | 558.3 | 554.0 | 551.1 |
| 35° | 551.9 | 544.7 | 533.3 | 529.0 | 525.4 |
| 37.5° | 526.9 | 520.4 | 509.0 | 504.0 | 500.4 |
| 40° | 501.1 | 495.4 | 484.0 | 477.7 | 474.7 |
| 42.5° | 476.1 | 470.4 | 459.1 | 451.9 | 447.6 |
| 45° | 449.0 | 444.1 | 433.3 | 425.5 | 422.6 |
| 47.5° | 422.6 | 417.7 | 406.2 | 398.3 | 394.1 |
| 50° | 394.8 | 391.2 | 381.2 | 371.2 | 367.7 |
| 52.5° | 367.7 | 362.6 | 353.4 | 345.5 | 340.6 |
| 55° | 339.8 | 335.5 | 326.9 | 318.4 | 314.8 |
| 57.5° | 312.0 | 308.4 | 299.1 | 290.6 | 287.6 |
| 60° | 284.1 | 281.3 | 271.3 | 263.4 | 261.3 |
| 62.5° | 257.0 | 252.0 | 244.9 | 237.7 | 234.9 |
| 65° | 229.2 | 224.9 | 217.8 | 211.3 | 207.8 |
| 67.5° | 200.6 | 197.0 | 190.6 | 185.6 | 182.8 |
| 70° | 174.2 | 171.3 | 164.9 | 159.9 | 157.1 |
| 72.5° | 147.1 | 144.2 | 140.6 | 135.7 | 133.6 |
| 75° | 119.9 | 118.6 | 114.9 | 110.7 | 112.1 |
| 77.5° | 95.7 | 92.8 | 91.3 | 89.2 | 87.1 |
| 80° | 71.5 | 70.7 | 69.3 | 67.1 | 65.6 |
| 82.5° | 48.6 | 48.6 | 47.9 | 45.0 | 45.0 |
| 85° | 29.2 | 28.5 | 27.9 | 25.7 | 25.0 |
| 87.5° | 12.9 | 11.4 | 10.0 | 7.9 | 7.2 |
| 90° | 1.0 | 13.1 | 35.7 | 33.5 | 34.5 |
| 92.5° | 22.5 | 30.5 | 31.7 | 32.7 | 32.7 |
| 95° | 53.1 | 63.3 | 65.2 | 65.2 | 63.3 |
| 97.5° | 88.4 | 97.9 | 101.9 | 101.9 | 101.9 |
| 100° | 129.2 | 137.6 | 140.4 | 140.4 | 139.4 |
| 102.5° | 172.1 | 178.3 | 182.3 | 183.4 | 182.3 |
| 105° | 219.0 | 221.9 | 224.1 | 225.9 | 225.9 |
| 107.5° | 265.6 | 270.0 | 270.0 | 270.6 | 265.6 |
| 110° | 310.7 | 316.5 | 316.5 | 316.5 | 313.7 |



TEST NUMBER: P924006

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US950-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 359.5 | 365.7 | 364.5 | 361.7 | 359.5 |
| 115° | 407.5 | 413.4 | 411.5 | 410.4 | 407.5 |
| 117.5° | 455.2 | 463.2 | 458.1 | 455.2 | 452.3 |
| 120° | 503.2 | 511.2 | 503.2 | 503.2 | 499.9 |
| 122.5° | 546.8 | 557.0 | 552.0 | 549.0 | 546.8 |
| 125° | 592.7 | 601.8 | 598.9 | 595.6 | 594.5 |
| 127.5° | 637.5 | 648.7 | 644.7 | 640.3 | 637.5 |
| 130° | 679.2 | 692.4 | 690.6 | 688.4 | 684.4 |
| 132.5° | 726.2 | 736.4 | 737.2 | 732.0 | 729.1 |
| 135° | 766.6 | 777.9 | 780.1 | 778.9 | 776.1 |
| 137.5° | 811.8 | 820.8 | 822.6 | 821.9 | 817.6 |
| 140° | 851.3 | 860.5 | 865.6 | 865.6 | 861.6 |
| 142.5° | 892.2 | 901.2 | 904.1 | 905.3 | 901.2 |
| 145° | 930.7 | 938.0 | 943.8 | 944.9 | 940.9 |
| 147.5° | 965.3 | 974.3 | 978.7 | 980.5 | 976.5 |
| 150° | 1000.9 | 1007.1 | 1011.1 | 1014.4 | 1011.1 |
| 152.5° | 1032.6 | 1038.7 | 1043.9 | 1047.9 | 1043.9 |
| 155° | 1064.2 | 1067.1 | 1070.4 | 1075.5 | 1072.2 |
| 157.5° | 1091.6 | 1093.7 | 1095.5 | 1102.8 | 1097.7 |
| 160° | 1115.9 | 1118.1 | 1119.1 | 1125.3 | 1121.0 |
| 162.5° | 1138.4 | 1138.4 | 1139.6 | 1146.4 | 1141.4 |
| 165° | 1157.8 | 1156.6 | 1156.6 | 1163.9 | 1158.8 |
| 167.5° | 1175.2 | 1171.9 | 1171.9 | 1179.2 | 1174.1 |
| 170° | 1188.3 | 1185.3 | 1184.3 | 1191.5 | 1185.3 |
| 172.5° | 1197.4 | 1194.5 | 1193.4 | 1200.7 | 1194.5 |
| 175° | 1204.7 | 1201.8 | 1199.6 | 1206.8 | 1200.7 |
| 177.5° | 1208.7 | 1205.8 | 1203.6 | 1209.8 | 1203.6 |
| 180° | 1206.8 | 1206.8 | 1206.8 | 1206.8 | 1206.8 |



TEST NUMBER: P924006
 CATALOG NUMBER: DFN2DIP-4P3F0-020D040US950-FLLFLL

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 | 5.19 | 5.94 | 6.26 | 7.01 | 8.47 | 4.75 | 5.50 | 5.82 | 6.57 | 8.03 |
| | 3H | 6.84 | 7.51 | 7.92 | 8.59 | 10.07 | 6.35 | 7.02 | 7.43 | 8.10 | 9.58 |
| | 4H | 7.42 | 8.06 | 8.51 | 9.14 | 10.62 | 6.93 | 7.56 | 8.02 | 8.64 | 10.13 |
| | 6H | 7.81 | 8.40 | 8.91 | 9.48 | 10.98 | 7.31 | 7.90 | 8.41 | 8.98 | 10.48 |
| | 8H | 7.91 | 8.47 | 9.01 | 9.57 | 11.06 | 7.41 | 7.97 | 8.51 | 9.07 | 10.56 |
| | 12H | 7.95 | 8.48 | 9.06 | 9.58 | 11.09 | 7.44 | 7.97 | 8.55 | 9.07 | 10.58 |
| 4H | 2H | 5.64 | 6.27 | 6.73 | 7.35 | 8.84 | 5.28 | 5.92 | 6.38 | 7.00 | 8.48 |
| | 3H | 7.49 | 8.02 | 8.59 | 9.13 | 10.62 | 7.08 | 7.61 | 8.18 | 8.72 | 10.21 |
| | 4H | 8.19 | 8.68 | 9.30 | 9.78 | 11.29 | 7.77 | 8.26 | 8.88 | 9.35 | 10.87 |
| | 6H | 8.70 | 9.12 | 9.81 | 10.24 | 11.75 | 8.27 | 8.68 | 9.38 | 9.80 | 11.31 |
| | 8H | 8.84 | 9.23 | 9.96 | 10.35 | 11.87 | 8.40 | 8.80 | 9.52 | 9.91 | 11.43 |
| | 12H | 8.91 | 9.26 | 10.04 | 10.39 | 11.92 | 8.46 | 8.81 | 9.59 | 9.94 | 11.47 |
| 8H | 4H | 8.38 | 8.77 | 9.49 | 9.88 | 11.40 | 8.00 | 8.39 | 9.11 | 9.50 | 11.03 |
| | 6H | 9.00 | 9.32 | 10.13 | 10.47 | 12.00 | 8.61 | 8.94 | 9.75 | 10.09 | 11.61 |
| | 8H | 9.21 | 9.50 | 10.36 | 10.63 | 12.17 | 8.82 | 9.10 | 9.96 | 10.24 | 11.78 |
| | 12H | 9.34 | 9.58 | 10.48 | 10.72 | 12.29 | 8.93 | 9.17 | 10.07 | 10.31 | 11.88 |
| 12H | 4H | 8.36 | 8.71 | 9.49 | 9.83 | 11.36 | 7.99 | 8.34 | 9.12 | 9.47 | 11.00 |
| | 6H | 9.02 | 9.31 | 10.17 | 10.44 | 11.98 | 8.65 | 8.93 | 9.79 | 10.07 | 11.61 |
| | 8H | 9.26 | 9.51 | 10.40 | 10.64 | 12.22 | 8.88 | 9.12 | 10.02 | 10.26 | 11.83 |