

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: P907641

Luminaire Tested: DFN2DIP-4P3F0-020D040US840-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P907641
REPORT IS A COMBINATION OF REPORTS P900570 AND P897473
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P3F0-020D040US840-RLLONL
Description: 3 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

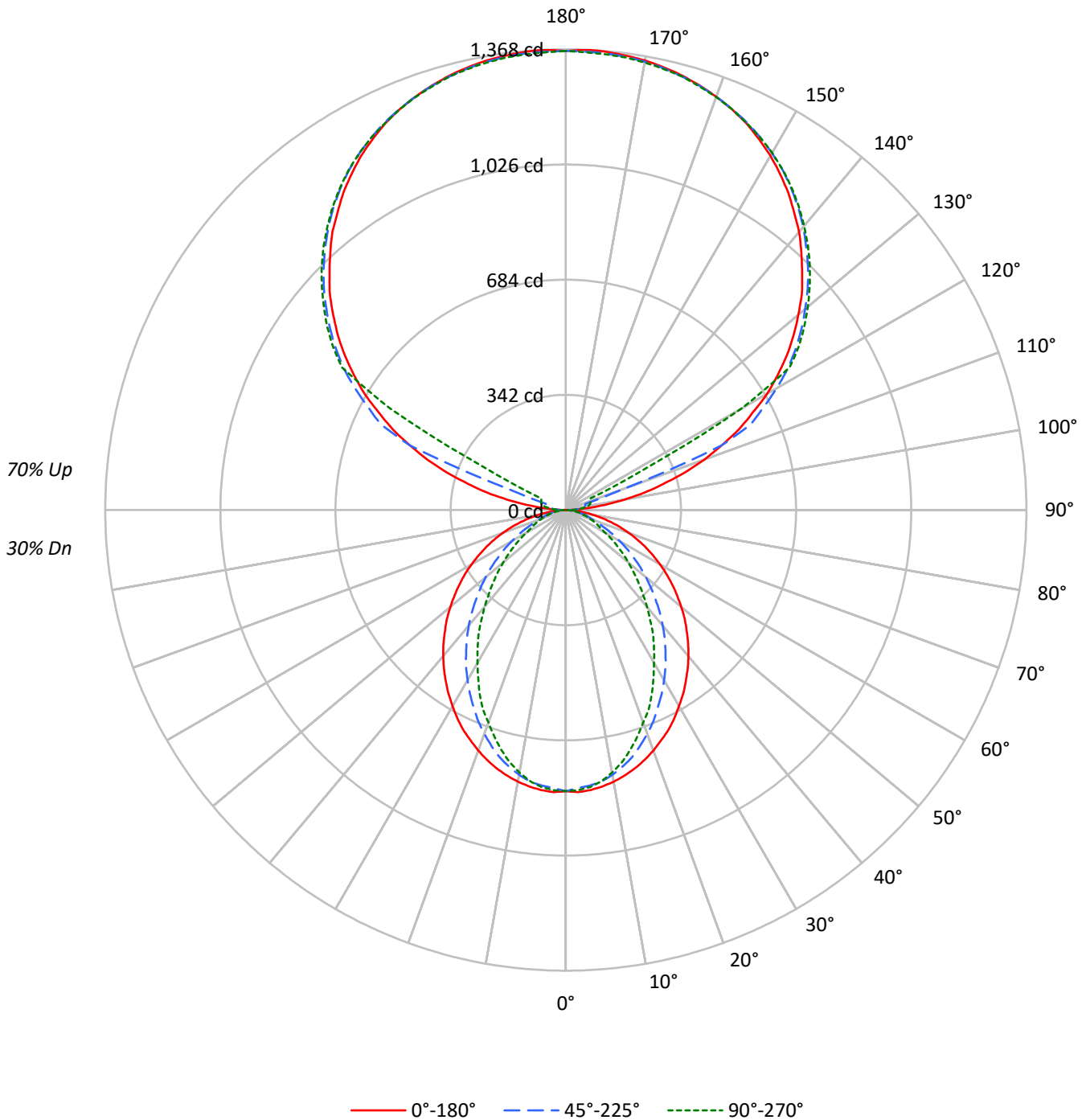
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5715.8 lumens
Efficiency: N/A
Efficacy: 125.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
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: P907641
CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLLONL

Luminous Intensity Polar Plot





TEST NUMBER: P907641

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLLONL

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 | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 30 |
| 1 | 94 | 90 | 86 | 83 | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 | 34 | 33 | 32 | 26 | |
| 2 | 85 | 78 | 73 | 68 | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 | 30 | 29 | 28 | 22 | |
| 3 | 78 | 69 | 62 | 57 | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 | 27 | 25 | 24 | 19 | |
| 4 | 71 | 61 | 54 | 48 | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 | 24 | 22 | 21 | 17 | |
| 5 | 66 | 55 | 47 | 41 | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 | 22 | 20 | 18 | 15 | |
| 6 | 60 | 49 | 41 | 36 | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 | 20 | 18 | 16 | 13 | |
| 7 | 56 | 44 | 37 | 31 | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 | 18 | 16 | 15 | 12 | |
| 8 | 52 | 40 | 33 | 28 | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 | 17 | 15 | 13 | 11 | |
| 9 | 48 | 37 | 29 | 25 | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 | 16 | 13 | 12 | 10 | |
| 10 | 45 | 33 | 27 | 22 | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 | 14 | 12 | 11 | 9 | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-----|-----|-----|
| 0° | 951 | 951 | 951 |
| 5° | 952 | 936 | 942 |
| 10° | 942 | 917 | 911 |
| 15° | 929 | 886 | 863 |
| 20° | 911 | 843 | 805 |
| 25° | 893 | 796 | 748 |
| 30° | 868 | 748 | 677 |
| 35° | 845 | 695 | 614 |
| 40° | 820 | 642 | 543 |
| 45° | 792 | 582 | 477 |
| 50° | 763 | 522 | 414 |
| 55° | 733 | 458 | 353 |
| 60° | 698 | 391 | 290 |
| 65° | 657 | 323 | 261 |
| 70° | 607 | 259 | 236 |
| 75° | 546 | 227 | 214 |
| 80° | 456 | 189 | 184 |
| 85° | 309 | 123 | 136 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 932 cd/sqm



TEST NUMBER: P907641

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLLONL

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 78.2 | 1.4 |
| 10°-20° | 214.8 | 3.8 |
| 20°-30° | 301.5 | 5.3 |
| 30°-40° | 328.7 | 5.8 |
| 40°-50° | 302.1 | 5.3 |
| 50°-60° | 237.3 | 4.2 |
| 60°-70° | 154.4 | 2.7 |
| 70°-80° | 79.5 | 1.4 |
| 80°-90° | 22.7 | 0.4 |
| 90°-100° | 44.9 | 0.8 |
| 100°-110° | 167.6 | 2.9 |
| 110°-120° | 444.4 | 7.8 |
| 120°-130° | 737.1 | 12.9 |
| 130°-140° | 783.0 | 13.7 |
| 140°-150° | 727.7 | 12.7 |
| 150°-160° | 585.1 | 10.2 |
| 160°-170° | 377.0 | 6.6 |
| 170°-180° | 129.8 | 2.3 |
| 0°-30° | 594.5 | 10.4 |
| 0°-40° | 923.2 | 16.2 |
| 0°-60° | 1462.6 | 25.6 |
| 0°-90° | 1719.2 | 30.1 |
| 90°-120° | 656.9 | 11.5 |
| 90°-150° | 2904.8 | 50.8 |
| 90°-180° | 3997.0 | 69.9 |
| 0°-180° | 5715.8 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 835 | 835 | 835 | 835 | 835 | |
| 5° | 835 | 831 | 821 | 828 | 826 | 79 |
| 15° | 794 | 786 | 760 | 746 | 738 | 224 |
| 25° | 721 | 696 | 647 | 616 | 604 | 331 |
| 35° | 621 | 582 | 516 | 468 | 452 | 389 |
| 45° | 508 | 457 | 378 | 324 | 306 | 392 |
| 55° | 386 | 327 | 246 | 200 | 186 | 345 |
| 65° | 261 | 199 | 132 | 106 | 104 | 258 |
| 75° | 139 | 86 | 60 | 55 | 54 | 147 |
| 85° | 32 | 17 | 14 | 14 | 14 | 37 |
| 90° | 1 | 12 | 20 | 25 | 27 | 5 |
| 95° | 64 | 32 | 38 | 43 | 42 | 76 |
| 105° | 300 | 330 | 60 | 71 | 75 | 320 |
| 115° | 567 | 584 | 609 | 152 | 81 | 558 |
| 125° | 802 | 815 | 834 | 840 | 843 | 715 |
| 135° | 992 | 1008 | 1017 | 1027 | 1025 | 767 |
| 145° | 1151 | 1150 | 1167 | 1174 | 1169 | 720 |
| 155° | 1268 | 1259 | 1271 | 1276 | 1269 | 584 |
| 165° | 1336 | 1330 | 1333 | 1340 | 1333 | 377 |
| 175° | 1366 | 1359 | 1361 | 1368 | 1358 | 130 |
| 180° | 1363 | 1363 | 1363 | 1363 | 1363 | |



TEST NUMBER: P907641

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 0° | 834.8 | 834.8 | 834.8 | 834.8 | 834.8 |
| 2.5° | 838.5 | 834.8 | 826.4 | 834.0 | 832.5 |
| 5° | 834.8 | 831.0 | 821.1 | 828.0 | 825.7 |
| 7.5° | 828.0 | 823.4 | 812.8 | 815.9 | 812.0 |
| 10° | 818.9 | 813.5 | 798.5 | 796.2 | 791.7 |
| 12.5° | 807.6 | 800.7 | 780.3 | 775.9 | 767.5 |
| 15° | 794.0 | 785.6 | 759.9 | 745.6 | 738.1 |
| 17.5° | 778.1 | 766.0 | 734.3 | 717.6 | 705.6 |
| 20° | 759.9 | 744.8 | 707.1 | 688.2 | 671.6 |
| 22.5° | 740.3 | 723.0 | 679.1 | 653.5 | 642.2 |
| 25° | 720.7 | 696.5 | 646.6 | 615.7 | 604.3 |
| 27.5° | 697.3 | 671.6 | 616.4 | 580.9 | 563.5 |
| 30° | 672.4 | 643.6 | 583.2 | 544.7 | 524.2 |
| 32.5° | 648.1 | 613.4 | 551.5 | 506.1 | 487.3 |
| 35° | 621.0 | 582.5 | 516.0 | 468.4 | 451.7 |
| 37.5° | 594.5 | 552.9 | 482.7 | 430.6 | 411.7 |
| 40° | 566.5 | 521.3 | 448.0 | 394.4 | 374.7 |
| 42.5° | 537.9 | 489.6 | 413.2 | 357.3 | 338.5 |
| 45° | 507.7 | 457.0 | 377.8 | 324.1 | 305.9 |
| 47.5° | 479.0 | 425.4 | 343.8 | 290.0 | 273.5 |
| 50° | 447.3 | 393.6 | 310.5 | 258.3 | 242.6 |
| 52.5° | 416.2 | 359.5 | 278.7 | 228.9 | 214.6 |
| 55° | 386.0 | 327.1 | 245.5 | 200.3 | 185.8 |
| 57.5° | 355.1 | 294.6 | 216.1 | 173.8 | 161.7 |
| 60° | 323.4 | 262.9 | 185.1 | 146.6 | 134.5 |
| 62.5° | 292.4 | 232.0 | 158.6 | 122.4 | 116.3 |
| 65° | 260.6 | 199.4 | 131.5 | 105.8 | 103.5 |
| 67.5° | 230.5 | 169.2 | 105.8 | 92.9 | 90.7 |
| 70° | 198.6 | 139.8 | 87.6 | 80.1 | 77.1 |
| 72.5° | 168.4 | 112.5 | 73.2 | 67.3 | 65.7 |
| 75° | 139.0 | 86.0 | 60.4 | 55.1 | 54.4 |
| 77.5° | 109.6 | 61.2 | 47.6 | 44.5 | 43.0 |
| 80° | 82.3 | 43.8 | 36.3 | 33.2 | 33.2 |
| 82.5° | 57.4 | 29.5 | 24.9 | 23.4 | 23.4 |
| 85° | 32.4 | 16.6 | 14.3 | 14.3 | 14.3 |
| 87.5° | 12.1 | 6.1 | 6.1 | 5.3 | 5.3 |
| 90° | 0.9 | 11.8 | 19.7 | 24.7 | 26.6 |
| 92.5° | 24.7 | 20.7 | 23.6 | 25.7 | 26.6 |
| 95° | 64.0 | 31.5 | 38.4 | 43.4 | 42.4 |
| 97.5° | 115.4 | 34.5 | 50.3 | 53.3 | 54.2 |
| 100° | 174.6 | 39.5 | 56.2 | 64.0 | 66.0 |
| 102.5° | 239.6 | 237.8 | 58.2 | 69.0 | 72.0 |
| 105° | 299.8 | 329.5 | 60.2 | 71.0 | 74.9 |
| 107.5° | 369.9 | 394.6 | 62.2 | 73.0 | 77.0 |
| 110° | 437.1 | 457.7 | 172.7 | 74.0 | 77.9 |



TEST NUMBER: P907641

CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 500.2 | 517.9 | 501.1 | 75.9 | 79.0 |
| 115° | 567.1 | 583.9 | 608.6 | 151.9 | 81.0 |
| 117.5° | 625.4 | 645.1 | 662.0 | 520.8 | 262.4 |
| 120° | 690.5 | 705.3 | 723.1 | 735.0 | 601.8 |
| 122.5° | 745.7 | 761.5 | 781.3 | 787.2 | 788.2 |
| 125° | 801.9 | 814.9 | 833.5 | 840.5 | 843.4 |
| 127.5° | 853.2 | 867.1 | 881.9 | 891.8 | 892.7 |
| 130° | 901.6 | 917.5 | 928.2 | 939.1 | 938.2 |
| 132.5° | 950.9 | 963.8 | 974.6 | 983.5 | 982.6 |
| 135° | 992.4 | 1008.2 | 1017.0 | 1026.9 | 1025.0 |
| 137.5° | 1035.7 | 1047.5 | 1057.5 | 1067.3 | 1064.4 |
| 140° | 1078.1 | 1086.1 | 1096.9 | 1105.8 | 1100.9 |
| 142.5° | 1113.8 | 1120.6 | 1133.5 | 1141.2 | 1136.4 |
| 145° | 1151.2 | 1150.2 | 1166.9 | 1173.9 | 1168.9 |
| 147.5° | 1183.7 | 1180.7 | 1197.5 | 1202.4 | 1198.6 |
| 150° | 1215.3 | 1208.4 | 1224.3 | 1230.1 | 1225.2 |
| 152.5° | 1241.9 | 1234.1 | 1248.8 | 1254.8 | 1247.9 |
| 155° | 1267.6 | 1258.8 | 1270.6 | 1276.5 | 1268.6 |
| 157.5° | 1288.3 | 1280.4 | 1289.4 | 1296.3 | 1288.3 |
| 160° | 1306.1 | 1300.1 | 1306.1 | 1311.9 | 1305.0 |
| 162.5° | 1321.8 | 1316.0 | 1320.9 | 1327.8 | 1318.9 |
| 165° | 1335.6 | 1329.8 | 1332.7 | 1339.6 | 1332.7 |
| 167.5° | 1346.6 | 1340.5 | 1343.6 | 1350.5 | 1341.6 |
| 170° | 1355.4 | 1349.5 | 1351.4 | 1358.4 | 1349.5 |
| 172.5° | 1361.3 | 1355.4 | 1357.5 | 1364.3 | 1355.4 |
| 175° | 1366.1 | 1359.3 | 1361.3 | 1368.2 | 1358.4 |
| 177.5° | 1368.2 | 1361.3 | 1362.3 | 1369.3 | 1360.4 |
| 180° | 1363.3 | 1363.3 | 1363.3 | 1363.3 | 1363.3 |



TEST NUMBER: P907641
 CATALOG NUMBER: DFN2DIP-4P3F0-020D040US840-RLONL

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 | 4.72 | 5.41 | 5.83 | 6.52 | 8.05 | 0.68 | 1.37 | 1.80 | 2.48 | 4.01 |
| | 3H | 6.38 | 7.00 | 7.51 | 8.11 | 9.66 | 1.85 | 2.47 | 2.98 | 3.59 | 5.13 |
| | 4H | 6.98 | 7.57 | 8.11 | 8.68 | 10.24 | 2.29 | 2.88 | 3.43 | 3.99 | 5.55 |
| | 6H | 7.39 | 7.93 | 8.53 | 9.05 | 10.61 | 2.60 | 3.14 | 3.74 | 4.26 | 5.82 |
| | 8H | 7.51 | 8.02 | 8.66 | 9.16 | 10.72 | 2.68 | 3.19 | 3.83 | 4.33 | 5.89 |
| | 12H | 7.57 | 8.05 | 8.72 | 9.18 | 10.76 | 2.72 | 3.20 | 3.87 | 4.33 | 5.91 |
| 4H | 2H | 4.72 | 5.30 | 5.86 | 6.42 | 7.97 | 1.26 | 1.84 | 2.40 | 2.96 | 4.51 |
| | 3H | 6.53 | 7.02 | 7.68 | 8.16 | 9.72 | 2.59 | 3.07 | 3.73 | 4.22 | 5.78 |
| | 4H | 7.21 | 7.66 | 8.36 | 8.79 | 10.38 | 3.12 | 3.57 | 4.27 | 4.70 | 6.29 |
| | 6H | 7.71 | 8.10 | 8.87 | 9.25 | 10.83 | 3.53 | 3.91 | 4.68 | 5.06 | 6.64 |
| | 8H | 7.88 | 8.24 | 9.04 | 9.39 | 10.98 | 3.65 | 4.01 | 4.80 | 5.15 | 6.75 |
| | 12H | 7.97 | 8.29 | 9.14 | 9.45 | 11.05 | 3.70 | 4.03 | 4.87 | 5.18 | 6.78 |
| 8H | 4H | 7.17 | 7.53 | 8.32 | 8.67 | 10.26 | 3.39 | 3.75 | 4.54 | 4.89 | 6.49 |
| | 6H | 7.72 | 8.02 | 8.90 | 9.21 | 10.80 | 3.89 | 4.19 | 5.07 | 5.38 | 6.97 |
| | 8H | 7.94 | 8.19 | 9.12 | 9.36 | 10.97 | 4.08 | 4.34 | 5.26 | 5.50 | 7.11 |
| | 12H | 8.07 | 8.29 | 9.25 | 9.45 | 11.10 | 4.19 | 4.41 | 5.37 | 5.58 | 7.22 |
| 12H | 4H | 7.11 | 7.44 | 8.28 | 8.59 | 10.19 | 3.39 | 3.71 | 4.56 | 4.87 | 6.47 |
| | 6H | 7.70 | 7.95 | 8.88 | 9.12 | 10.73 | 3.94 | 4.20 | 5.12 | 5.36 | 6.97 |
| | 8H | 7.91 | 8.13 | 9.09 | 9.30 | 10.94 | 4.14 | 4.37 | 5.32 | 5.53 | 7.17 |