

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: P918534

Luminaire Tested: DFN2DIP-4P2F0-040D030US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P918534
REPORT IS A COMBINATION OF REPORTS P899021 AND P895899
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P2F0-040D030US935-FLLFLL
Description: 2 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

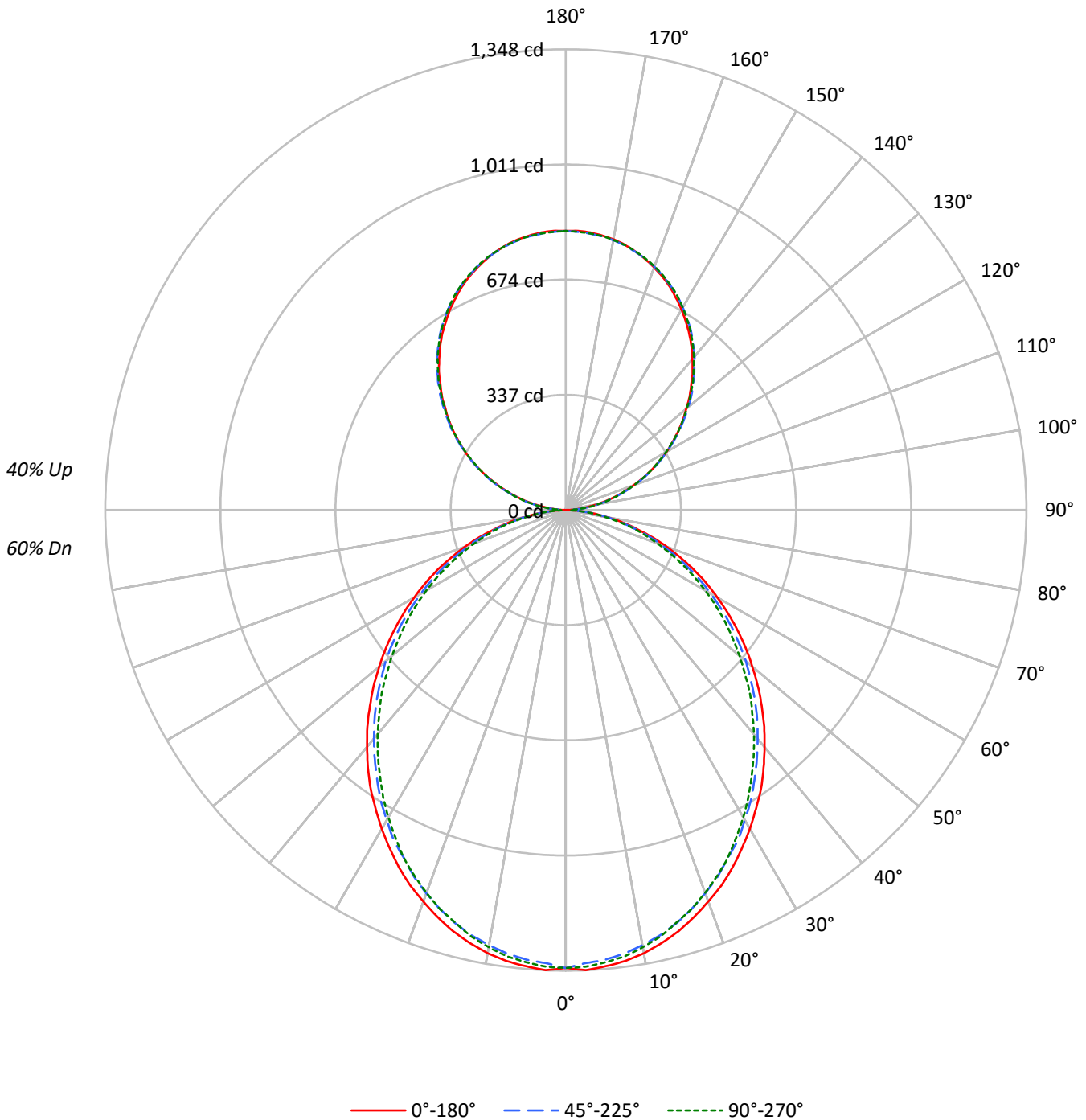
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5695.4 lumens
Efficiency: N/A
Efficacy: 89.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 2.07' x L: 2.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 63.8
Input Voltage (V): 120
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: P918534

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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 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 110 | 110 | 110 | 110 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 77 | 77 | 77 | 65 | 65 | 65 | 65 | 65 | 65 | 60 |
| 1 | 100 | 96 | 92 | 88 | 93 | 89 | 86 | 83 | 78 | 75 | 73 | 67 | 66 | 64 | 58 | 56 | 55 | 55 | 55 | 55 | 50 |
| 2 | 91 | 84 | 77 | 72 | 85 | 78 | 73 | 68 | 68 | 64 | 61 | 59 | 56 | 53 | 51 | 48 | 46 | 46 | 46 | 46 | 42 |
| 3 | 83 | 73 | 66 | 60 | 77 | 69 | 62 | 57 | 60 | 55 | 51 | 52 | 48 | 45 | 45 | 42 | 40 | 40 | 40 | 40 | 36 |
| 4 | 76 | 65 | 57 | 51 | 71 | 61 | 54 | 48 | 54 | 48 | 43 | 47 | 42 | 39 | 40 | 37 | 34 | 34 | 34 | 34 | 31 |
| 5 | 70 | 58 | 50 | 44 | 65 | 55 | 47 | 42 | 48 | 42 | 38 | 42 | 37 | 34 | 36 | 33 | 30 | 30 | 30 | 30 | 27 |
| 6 | 64 | 52 | 44 | 38 | 60 | 49 | 42 | 36 | 43 | 37 | 33 | 38 | 33 | 29 | 33 | 29 | 26 | 26 | 26 | 26 | 23 |
| 7 | 60 | 47 | 39 | 33 | 56 | 44 | 37 | 32 | 39 | 33 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 23 | 23 | 23 | 21 |
| 8 | 55 | 43 | 35 | 30 | 52 | 40 | 33 | 28 | 36 | 30 | 26 | 32 | 27 | 23 | 28 | 24 | 21 | 21 | 21 | 21 | 19 |
| 9 | 52 | 39 | 32 | 26 | 48 | 37 | 30 | 25 | 33 | 27 | 23 | 29 | 24 | 21 | 26 | 22 | 19 | 19 | 19 | 19 | 17 |
| 10 | 48 | 36 | 29 | 24 | 45 | 34 | 27 | 23 | 30 | 25 | 21 | 27 | 22 | 19 | 24 | 20 | 17 | 17 | 17 | 17 | 15 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3356 | 3356 | 3356 |
| 5° | 3354 | 3300 | 3325 |
| 10° | 3320 | 3247 | 3275 |
| 15° | 3265 | 3185 | 3199 |
| 20° | 3192 | 3103 | 3122 |
| 25° | 3120 | 3005 | 3033 |
| 30° | 3030 | 2914 | 2922 |
| 35° | 2945 | 2808 | 2804 |
| 40° | 2842 | 2701 | 2692 |
| 45° | 2738 | 2593 | 2577 |
| 50° | 2625 | 2479 | 2445 |
| 55° | 2506 | 2348 | 2321 |
| 60° | 2370 | 2193 | 2180 |
| 65° | 2221 | 2031 | 2014 |
| 70° | 2032 | 1835 | 1833 |
| 75° | 1775 | 1599 | 1659 |
| 80° | 1459 | 1299 | 1343 |
| 85° | 978 | 812 | 835 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2738 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 126.1 | 2.2 |
| 10°-20° | 354.9 | 6.2 |
| 20°-30° | 521.5 | 9.2 |
| 30°-40° | 605.7 | 10.6 |
| 40°-50° | 605.0 | 10.6 |
| 50°-60° | 527.5 | 9.3 |
| 60°-70° | 389.9 | 6.8 |
| 70°-80° | 220.6 | 3.9 |
| 80°-90° | 60.5 | 1.1 |
| 90°-100° | 50.6 | 0.9 |
| 100°-110° | 160.6 | 2.8 |
| 110°-120° | 274.9 | 4.8 |
| 120°-130° | 361.5 | 6.3 |
| 130°-140° | 405.7 | 7.1 |
| 140°-150° | 397.9 | 7.0 |
| 150°-160° | 333.8 | 5.9 |
| 160°-170° | 221.3 | 3.9 |
| 170°-180° | 77.4 | 1.4 |
| 0°-30° | 1002.5 | 17.6 |
| 0°-40° | 1608.3 | 28.2 |
| 0°-60° | 2740.7 | 48.1 |
| 0°-90° | 3411.8 | 59.9 |
| 90°-120° | 486.0 | 8.5 |
| 90°-150° | 1651.1 | 29.0 |
| 90°-180° | 2284.0 | 40.1 |
| 0°-180° | 5695.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1340 | 1340 | 1340 | 1340 | 1340 | |
| 5° | 1340 | 1335 | 1321 | 1331 | 1329 | 127 |
| 15° | 1276 | 1268 | 1251 | 1256 | 1250 | 359 |
| 25° | 1154 | 1144 | 1122 | 1125 | 1122 | 531 |
| 35° | 996 | 983 | 963 | 955 | 948 | 622 |
| 45° | 810 | 802 | 782 | 768 | 763 | 626 |
| 55° | 614 | 606 | 590 | 575 | 568 | 548 |
| 65° | 414 | 406 | 393 | 381 | 375 | 409 |
| 75° | 216 | 214 | 207 | 200 | 202 | 231 |
| 85° | 53 | 52 | 50 | 46 | 45 | 59 |
| 90° | 1 | 9 | 24 | 23 | 23 | 5 |
| 95° | 36 | 43 | 44 | 44 | 43 | 40 |
| 105° | 148 | 150 | 152 | 153 | 153 | 156 |
| 115° | 276 | 280 | 278 | 278 | 276 | 273 |
| 125° | 401 | 407 | 405 | 403 | 402 | 358 |
| 135° | 519 | 526 | 528 | 527 | 525 | 401 |
| 145° | 630 | 635 | 639 | 640 | 637 | 394 |
| 155° | 720 | 722 | 724 | 728 | 726 | 332 |
| 165° | 784 | 783 | 783 | 788 | 784 | 221 |
| 175° | 816 | 814 | 812 | 817 | 813 | 77 |
| 180° | 817 | 817 | 817 | 817 | 817 | |



TEST NUMBER: P918534

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1340.1 | 1340.1 | 1340.1 | 1340.1 | 1340.1 |
| 2.5° | 1347.9 | 1341.4 | 1327.2 | 1340.1 | 1337.6 |
| 5° | 1340.1 | 1335.0 | 1320.8 | 1331.0 | 1328.6 |
| 7.5° | 1331.0 | 1323.4 | 1309.1 | 1319.6 | 1317.0 |
| 10° | 1317.0 | 1307.9 | 1292.5 | 1302.8 | 1298.9 |
| 12.5° | 1297.5 | 1289.9 | 1274.4 | 1280.9 | 1278.2 |
| 15° | 1275.7 | 1268.0 | 1251.2 | 1256.4 | 1250.0 |
| 17.5° | 1248.6 | 1241.0 | 1224.2 | 1230.5 | 1224.2 |
| 20° | 1218.9 | 1211.3 | 1193.3 | 1197.0 | 1192.1 |
| 22.5° | 1189.4 | 1177.8 | 1161.0 | 1161.0 | 1158.4 |
| 25° | 1154.5 | 1144.3 | 1122.4 | 1124.9 | 1122.4 |
| 27.5° | 1115.9 | 1106.8 | 1090.2 | 1086.3 | 1079.9 |
| 30° | 1077.3 | 1066.9 | 1047.7 | 1043.8 | 1038.6 |
| 32.5° | 1036.0 | 1028.4 | 1007.7 | 1000.0 | 994.7 |
| 35° | 996.1 | 983.3 | 962.6 | 954.8 | 948.4 |
| 37.5° | 951.0 | 939.3 | 918.7 | 909.7 | 903.3 |
| 40° | 904.7 | 894.2 | 873.6 | 862.1 | 857.0 |
| 42.5° | 859.5 | 849.1 | 828.6 | 815.6 | 808.0 |
| 45° | 810.5 | 801.6 | 782.1 | 768.1 | 762.8 |
| 47.5° | 762.8 | 753.8 | 733.2 | 719.0 | 711.4 |
| 50° | 712.6 | 706.1 | 688.1 | 670.0 | 663.6 |
| 52.5° | 663.6 | 654.6 | 637.9 | 623.7 | 614.7 |
| 55° | 613.5 | 605.6 | 590.2 | 574.7 | 568.3 |
| 57.5° | 563.1 | 556.7 | 539.8 | 524.4 | 519.3 |
| 60° | 512.8 | 507.7 | 489.7 | 475.5 | 471.7 |
| 62.5° | 463.9 | 454.9 | 442.0 | 429.1 | 424.0 |
| 65° | 413.7 | 405.9 | 393.0 | 381.4 | 375.1 |
| 67.5° | 362.1 | 355.6 | 344.1 | 335.1 | 329.9 |
| 70° | 314.4 | 309.3 | 297.6 | 288.6 | 283.5 |
| 72.5° | 265.5 | 260.3 | 253.9 | 244.9 | 241.0 |
| 75° | 216.5 | 214.0 | 207.4 | 199.8 | 202.3 |
| 77.5° | 172.6 | 167.5 | 164.9 | 161.0 | 157.2 |
| 80° | 128.9 | 127.5 | 124.9 | 121.1 | 118.6 |
| 82.5° | 87.6 | 87.6 | 86.4 | 81.2 | 81.2 |
| 85° | 52.8 | 51.6 | 50.3 | 46.3 | 45.1 |
| 87.5° | 23.2 | 20.7 | 18.1 | 14.2 | 12.8 |
| 90° | 0.8 | 8.9 | 24.1 | 22.6 | 23.4 |
| 92.5° | 15.2 | 20.7 | 21.4 | 22.1 | 22.1 |
| 95° | 36.0 | 42.9 | 44.1 | 44.1 | 42.9 |
| 97.5° | 59.8 | 66.2 | 69.0 | 69.0 | 69.0 |
| 100° | 87.4 | 93.1 | 95.1 | 95.1 | 94.4 |
| 102.5° | 116.5 | 120.7 | 123.4 | 124.2 | 123.4 |
| 105° | 148.3 | 150.2 | 151.7 | 152.9 | 152.9 |
| 107.5° | 179.8 | 182.7 | 182.7 | 183.2 | 179.8 |
| 110° | 210.3 | 214.3 | 214.3 | 214.3 | 212.3 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 243.3 | 247.5 | 246.8 | 244.8 | 243.3 |
| 115° | 275.9 | 279.7 | 278.5 | 277.8 | 275.9 |
| 117.5° | 308.1 | 313.5 | 310.0 | 308.1 | 306.1 |
| 120° | 340.6 | 346.0 | 340.6 | 340.6 | 338.4 |
| 122.5° | 370.1 | 377.0 | 373.6 | 371.6 | 370.1 |
| 125° | 401.2 | 407.3 | 405.4 | 403.1 | 402.4 |
| 127.5° | 431.4 | 439.1 | 436.4 | 433.4 | 431.4 |
| 130° | 459.8 | 468.6 | 467.4 | 466.0 | 463.2 |
| 132.5° | 491.5 | 498.4 | 498.9 | 495.5 | 493.5 |
| 135° | 518.9 | 526.5 | 528.0 | 527.3 | 525.3 |
| 137.5° | 549.4 | 555.6 | 556.8 | 556.4 | 553.4 |
| 140° | 576.3 | 582.5 | 585.9 | 585.9 | 583.2 |
| 142.5° | 603.9 | 610.0 | 612.0 | 612.8 | 610.0 |
| 145° | 630.0 | 634.9 | 638.9 | 639.5 | 636.9 |
| 147.5° | 653.4 | 659.5 | 662.5 | 663.7 | 661.0 |
| 150° | 677.5 | 681.7 | 684.4 | 686.6 | 684.4 |
| 152.5° | 699.0 | 703.1 | 706.5 | 709.3 | 706.5 |
| 155° | 720.4 | 722.3 | 724.5 | 728.0 | 725.8 |
| 157.5° | 738.8 | 740.3 | 741.6 | 746.5 | 743.0 |
| 160° | 755.4 | 756.8 | 757.6 | 761.7 | 758.8 |
| 162.5° | 770.6 | 770.6 | 771.4 | 776.0 | 772.6 |
| 165° | 783.7 | 782.9 | 782.9 | 787.8 | 784.4 |
| 167.5° | 795.5 | 793.2 | 793.2 | 798.1 | 794.7 |
| 170° | 804.3 | 802.4 | 801.7 | 806.6 | 802.4 |
| 172.5° | 810.5 | 808.6 | 807.8 | 812.7 | 808.6 |
| 175° | 815.5 | 813.5 | 812.0 | 816.9 | 812.7 |
| 177.5° | 818.1 | 816.1 | 814.7 | 818.9 | 814.7 |
| 180° | 816.9 | 816.9 | 816.9 | 816.9 | 816.9 |



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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 | 12.21 | 13.17 | 13.08 | 14.06 | 15.18 | 11.76 | 12.72 | 12.63 | 13.61 | 14.73 |
| | 3H | 13.85 | 14.71 | 14.73 | 15.61 | 16.76 | 13.36 | 14.22 | 14.24 | 15.12 | 16.27 |
| | 4H | 14.43 | 15.24 | 15.33 | 16.15 | 17.31 | 13.94 | 14.75 | 14.83 | 15.65 | 16.81 |
| | 6H | 14.82 | 15.57 | 15.73 | 16.48 | 17.65 | 14.32 | 15.07 | 15.23 | 15.98 | 17.15 |
| | 8H | 14.92 | 15.63 | 15.83 | 16.56 | 17.73 | 14.42 | 15.13 | 15.33 | 16.06 | 17.23 |
| | 12H | 14.96 | 15.64 | 15.88 | 16.56 | 17.76 | 14.45 | 15.13 | 15.37 | 16.05 | 17.25 |
| 4H | 2H | 12.67 | 13.48 | 13.57 | 14.39 | 15.54 | 12.31 | 13.13 | 13.21 | 14.03 | 15.19 |
| | 3H | 14.52 | 15.20 | 15.43 | 16.13 | 17.30 | 14.11 | 14.79 | 15.02 | 15.72 | 16.90 |
| | 4H | 15.22 | 15.84 | 16.14 | 16.77 | 17.97 | 14.79 | 15.41 | 15.72 | 16.34 | 17.54 |
| | 6H | 15.72 | 16.25 | 16.65 | 17.21 | 18.40 | 15.28 | 15.82 | 16.22 | 16.77 | 17.97 |
| | 8H | 15.86 | 16.36 | 16.80 | 17.30 | 18.52 | 15.42 | 15.92 | 16.36 | 16.87 | 18.08 |
| | 12H | 15.92 | 16.37 | 16.88 | 17.34 | 18.56 | 15.48 | 15.93 | 16.43 | 16.89 | 18.11 |
| 8H | 4H | 15.41 | 15.91 | 16.35 | 16.86 | 18.07 | 15.03 | 15.53 | 15.97 | 16.48 | 17.69 |
| | 6H | 16.02 | 16.43 | 16.98 | 17.42 | 18.63 | 15.63 | 16.04 | 16.60 | 17.03 | 18.25 |
| | 8H | 16.22 | 16.59 | 17.20 | 17.57 | 18.80 | 15.83 | 16.19 | 16.80 | 17.17 | 18.40 |
| | 12H | 16.34 | 16.66 | 17.32 | 17.64 | 18.92 | 15.93 | 16.25 | 16.91 | 17.23 | 18.51 |
| 12H | 4H | 15.40 | 15.85 | 16.35 | 16.81 | 18.03 | 15.03 | 15.48 | 15.98 | 16.44 | 17.66 |
| | 6H | 16.04 | 16.41 | 17.01 | 17.39 | 18.62 | 15.67 | 16.03 | 16.64 | 17.01 | 18.24 |
| | 8H | 16.27 | 16.59 | 17.25 | 17.56 | 18.84 | 15.89 | 16.21 | 16.87 | 17.18 | 18.46 |