

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: P921595

Luminaire Tested: DFN2DIP-HX2F0-060D020US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921595
REPORT IS A COMBINATION OF REPORTS P900679 AND P897595
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX2F0-060D020US940-FLONL
Description: 2 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

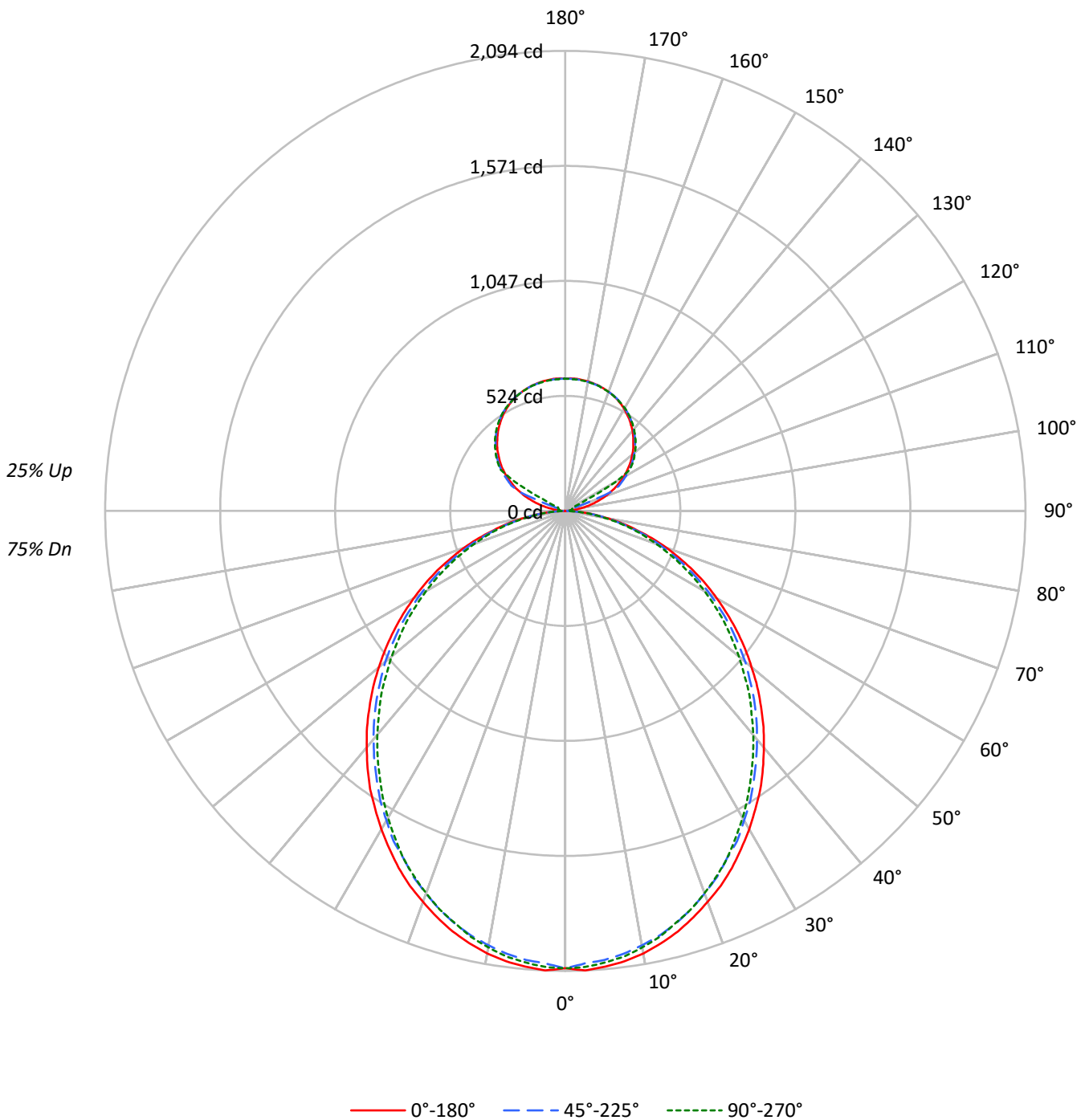
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7062.3 lumens
Efficiency: N/A
Efficacy: 94.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 74.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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: P921595

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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 | 113 | 113 | 113 | 113 | 108 | 108 | 108 | 108 | 97 | 97 | 97 | 88 | 88 | 88 | 79 | 79 | 79 | 79 | 79 | 79 | 75 |
| 1 | 103 | 99 | 95 | 91 | 98 | 94 | 91 | 87 | 85 | 83 | 80 | 77 | 75 | 73 | 70 | 68 | 67 | 67 | 67 | 67 | 63 |
| 2 | 94 | 86 | 80 | 75 | 89 | 82 | 77 | 72 | 75 | 70 | 66 | 68 | 64 | 61 | 62 | 59 | 56 | 56 | 56 | 56 | 53 |
| 3 | 86 | 76 | 68 | 62 | 81 | 73 | 66 | 60 | 66 | 61 | 56 | 60 | 56 | 52 | 55 | 51 | 48 | 48 | 48 | 48 | 45 |
| 4 | 79 | 67 | 59 | 53 | 75 | 64 | 57 | 51 | 59 | 53 | 48 | 54 | 49 | 45 | 49 | 45 | 41 | 41 | 41 | 41 | 39 |
| 5 | 72 | 60 | 52 | 46 | 69 | 58 | 50 | 44 | 53 | 46 | 41 | 48 | 43 | 39 | 44 | 40 | 36 | 36 | 36 | 36 | 33 |
| 6 | 67 | 54 | 46 | 40 | 63 | 52 | 44 | 39 | 48 | 41 | 36 | 44 | 38 | 34 | 40 | 35 | 32 | 32 | 32 | 32 | 29 |
| 7 | 62 | 49 | 41 | 35 | 59 | 47 | 39 | 34 | 43 | 37 | 32 | 40 | 34 | 30 | 37 | 32 | 28 | 28 | 28 | 28 | 26 |
| 8 | 58 | 45 | 37 | 31 | 55 | 43 | 36 | 30 | 40 | 33 | 29 | 37 | 31 | 27 | 34 | 29 | 25 | 25 | 25 | 25 | 23 |
| 9 | 54 | 41 | 33 | 28 | 51 | 39 | 32 | 27 | 37 | 30 | 26 | 34 | 28 | 24 | 31 | 26 | 23 | 23 | 23 | 23 | 21 |
| 10 | 50 | 38 | 30 | 25 | 48 | 36 | 29 | 25 | 34 | 28 | 23 | 31 | 26 | 22 | 29 | 24 | 21 | 21 | 21 | 21 | 19 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 4905 | 4905 | 4905 |
| 5° | 4905 | 4825 | 4860 |
| 10° | 4857 | 4748 | 4785 |
| 15° | 4778 | 4659 | 4674 |
| 20° | 4674 | 4538 | 4560 |
| 25° | 4570 | 4397 | 4429 |
| 30° | 4442 | 4265 | 4266 |
| 35° | 4319 | 4110 | 4094 |
| 40° | 4170 | 3954 | 3929 |
| 45° | 4021 | 3797 | 3760 |
| 50° | 3858 | 3631 | 3565 |
| 55° | 3686 | 3441 | 3384 |
| 60° | 3491 | 3216 | 3176 |
| 65° | 3277 | 2980 | 2932 |
| 70° | 3006 | 2694 | 2666 |
| 75° | 2633 | 2351 | 2409 |
| 80° | 2180 | 1914 | 1944 |
| 85° | 1478 | 1201 | 1204 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4021 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 195.9 | 2.8 |
| 10°-20° | 551.3 | 7.8 |
| 20°-30° | 810.2 | 11.5 |
| 30°-40° | 941.0 | 13.3 |
| 40°-50° | 939.8 | 13.3 |
| 50°-60° | 819.5 | 11.6 |
| 60°-70° | 605.8 | 8.6 |
| 70°-80° | 342.7 | 4.9 |
| 80°-90° | 91.5 | 1.3 |
| 90°-100° | 19.8 | 0.3 |
| 100°-110° | 74.0 | 1.0 |
| 110°-120° | 196.2 | 2.8 |
| 120°-130° | 325.4 | 4.6 |
| 130°-140° | 345.7 | 4.9 |
| 140°-150° | 321.3 | 4.5 |
| 150°-160° | 258.3 | 3.7 |
| 160°-170° | 166.4 | 2.4 |
| 170°-180° | 57.3 | 0.8 |
| 0°-30° | 1557.4 | 22.1 |
| 0°-40° | 2498.4 | 35.4 |
| 0°-60° | 4257.8 | 60.3 |
| 0°-90° | 5297.8 | 75.0 |
| 90°-120° | 290.0 | 4.1 |
| 90°-150° | 1282.5 | 18.2 |
| 90°-180° | 1765.0 | 25.0 |
| 0°-180° | 7062.3 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2082 | 2082 | 2082 | 2082 | 2082 | |
| 5° | 2082 | 2074 | 2052 | 2068 | 2064 | 198 |
| 15° | 1982 | 1970 | 1944 | 1952 | 1942 | 558 |
| 25° | 1794 | 1778 | 1744 | 1748 | 1744 | 825 |
| 35° | 1548 | 1528 | 1495 | 1483 | 1473 | 966 |
| 45° | 1259 | 1245 | 1215 | 1193 | 1185 | 972 |
| 55° | 953 | 941 | 917 | 893 | 883 | 852 |
| 65° | 643 | 631 | 611 | 592 | 583 | 635 |
| 75° | 336 | 332 | 322 | 310 | 314 | 359 |
| 85° | 82 | 80 | 78 | 72 | 70 | 91 |
| 90° | 0 | 5 | 9 | 11 | 12 | 7 |
| 95° | 28 | 14 | 17 | 19 | 19 | 33 |
| 105° | 132 | 145 | 27 | 31 | 33 | 141 |
| 115° | 250 | 258 | 269 | 67 | 36 | 247 |
| 125° | 354 | 360 | 368 | 371 | 372 | 316 |
| 135° | 438 | 445 | 449 | 453 | 452 | 338 |
| 145° | 508 | 508 | 515 | 518 | 516 | 318 |
| 155° | 560 | 556 | 561 | 564 | 560 | 258 |
| 165° | 590 | 587 | 588 | 592 | 588 | 167 |
| 175° | 603 | 600 | 601 | 604 | 600 | 57 |
| 180° | 602 | 602 | 602 | 602 | 602 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2081.8 | 2081.8 | 2081.8 | 2081.8 | 2081.8 |
| 2.5° | 2093.9 | 2083.9 | 2061.8 | 2081.8 | 2078.0 |
| 5° | 2081.8 | 2073.9 | 2051.8 | 2067.8 | 2064.0 |
| 7.5° | 2067.8 | 2055.9 | 2033.8 | 2050.0 | 2045.9 |
| 10° | 2045.9 | 2031.9 | 2007.9 | 2023.8 | 2017.9 |
| 12.5° | 2015.8 | 2003.9 | 1979.9 | 1989.9 | 1985.8 |
| 15° | 1981.7 | 1969.9 | 1943.8 | 1951.9 | 1941.9 |
| 17.5° | 1939.7 | 1927.9 | 1901.8 | 1911.6 | 1901.8 |
| 20° | 1893.6 | 1881.8 | 1853.7 | 1859.7 | 1851.8 |
| 22.5° | 1847.8 | 1829.7 | 1803.6 | 1803.6 | 1799.6 |
| 25° | 1793.6 | 1777.7 | 1743.7 | 1747.5 | 1743.7 |
| 27.5° | 1733.5 | 1719.5 | 1693.5 | 1687.7 | 1677.7 |
| 30° | 1673.7 | 1657.4 | 1627.5 | 1621.6 | 1613.5 |
| 32.5° | 1609.4 | 1597.6 | 1565.5 | 1553.4 | 1545.3 |
| 35° | 1547.5 | 1527.5 | 1495.4 | 1483.3 | 1473.3 |
| 37.5° | 1477.4 | 1459.3 | 1427.3 | 1413.2 | 1403.2 |
| 40° | 1405.3 | 1389.2 | 1357.2 | 1339.3 | 1331.2 |
| 42.5° | 1335.2 | 1319.1 | 1287.3 | 1267.1 | 1255.2 |
| 45° | 1259.3 | 1245.2 | 1215.0 | 1193.2 | 1185.1 |
| 47.5° | 1185.1 | 1171.1 | 1139.1 | 1117.0 | 1105.0 |
| 50° | 1107.0 | 1097.0 | 1069.0 | 1040.9 | 1030.9 |
| 52.5° | 1030.9 | 1016.9 | 991.0 | 968.9 | 954.9 |
| 55° | 953.0 | 940.8 | 916.9 | 892.9 | 882.9 |
| 57.5° | 874.9 | 864.9 | 838.7 | 814.8 | 806.6 |
| 60° | 796.7 | 788.8 | 760.8 | 738.7 | 732.7 |
| 62.5° | 720.6 | 706.6 | 686.6 | 666.6 | 658.6 |
| 65° | 642.7 | 630.6 | 610.6 | 592.5 | 582.6 |
| 67.5° | 562.6 | 552.4 | 534.6 | 520.6 | 512.5 |
| 70° | 488.5 | 480.5 | 462.4 | 448.4 | 440.5 |
| 72.5° | 412.4 | 404.4 | 394.4 | 380.4 | 374.4 |
| 75° | 336.2 | 332.4 | 322.2 | 310.3 | 314.3 |
| 77.5° | 268.2 | 260.2 | 256.1 | 250.2 | 244.2 |
| 80° | 200.3 | 198.1 | 194.1 | 188.2 | 184.1 |
| 82.5° | 136.2 | 136.2 | 134.2 | 126.2 | 126.2 |
| 85° | 81.9 | 80.1 | 78.1 | 72.0 | 70.1 |
| 87.5° | 36.1 | 32.1 | 28.0 | 22.1 | 20.0 |
| 90° | 0.4 | 5.3 | 8.6 | 10.9 | 11.8 |
| 92.5° | 10.9 | 9.2 | 10.4 | 11.3 | 11.8 |
| 95° | 28.3 | 13.9 | 16.9 | 19.2 | 18.7 |
| 97.5° | 50.9 | 15.2 | 22.2 | 23.5 | 24.0 |
| 100° | 77.1 | 17.4 | 24.8 | 28.3 | 29.2 |
| 102.5° | 105.8 | 105.0 | 25.7 | 30.5 | 31.8 |
| 105° | 132.4 | 145.4 | 26.6 | 31.3 | 33.1 |
| 107.5° | 163.4 | 174.2 | 27.5 | 32.2 | 34.0 |
| 110° | 193.0 | 202.1 | 76.2 | 32.7 | 34.4 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 220.8 | 228.6 | 221.2 | 33.5 | 34.9 |
| 115° | 250.4 | 257.8 | 268.8 | 67.1 | 35.8 |
| 117.5° | 276.1 | 284.8 | 292.2 | 230.0 | 115.8 |
| 120° | 304.9 | 311.4 | 319.2 | 324.5 | 265.6 |
| 122.5° | 329.2 | 336.2 | 344.9 | 347.5 | 348.0 |
| 125° | 354.1 | 359.7 | 368.0 | 371.0 | 372.4 |
| 127.5° | 376.7 | 382.8 | 389.4 | 393.7 | 394.1 |
| 130° | 398.1 | 405.0 | 409.8 | 414.6 | 414.2 |
| 132.5° | 419.8 | 425.5 | 430.3 | 434.2 | 433.8 |
| 135° | 438.2 | 445.1 | 449.0 | 453.4 | 452.5 |
| 137.5° | 457.3 | 462.5 | 466.9 | 471.3 | 469.9 |
| 140° | 476.0 | 479.6 | 484.3 | 488.2 | 486.1 |
| 142.5° | 491.7 | 494.8 | 500.4 | 503.9 | 501.7 |
| 145° | 508.3 | 507.8 | 515.2 | 518.3 | 516.1 |
| 147.5° | 522.6 | 521.3 | 528.7 | 530.8 | 529.1 |
| 150° | 536.5 | 533.5 | 540.5 | 543.1 | 540.9 |
| 152.5° | 548.3 | 544.8 | 551.3 | 554.0 | 550.9 |
| 155° | 559.6 | 555.7 | 561.0 | 563.6 | 560.1 |
| 157.5° | 568.8 | 565.3 | 569.3 | 572.3 | 568.8 |
| 160° | 576.7 | 574.0 | 576.7 | 579.3 | 576.2 |
| 162.5° | 583.5 | 580.9 | 583.2 | 586.2 | 582.3 |
| 165° | 589.7 | 587.1 | 588.4 | 591.5 | 588.4 |
| 167.5° | 594.5 | 591.8 | 593.2 | 596.3 | 592.3 |
| 170° | 598.4 | 595.8 | 596.6 | 599.7 | 595.8 |
| 172.5° | 601.0 | 598.4 | 599.3 | 602.4 | 598.4 |
| 175° | 603.2 | 600.1 | 601.0 | 604.0 | 599.7 |
| 177.5° | 604.0 | 601.0 | 601.5 | 604.5 | 600.6 |
| 180° | 601.9 | 601.9 | 601.9 | 601.9 | 601.9 |



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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 | 14.71 | 15.85 | 15.42 | 16.58 | 17.44 | 14.29 | 15.43 | 14.99 | 16.16 | 17.02 |
| | 3H | 16.36 | 17.39 | 17.08 | 18.13 | 19.02 | 15.90 | 16.93 | 16.62 | 17.67 | 18.56 |
| | 4H | 16.95 | 17.92 | 17.69 | 18.66 | 19.57 | 16.49 | 17.46 | 17.23 | 18.20 | 19.11 |
| | 6H | 17.34 | 18.24 | 18.09 | 18.99 | 19.91 | 16.88 | 17.78 | 17.64 | 18.53 | 19.46 |
| | 8H | 17.44 | 18.30 | 18.21 | 19.07 | 20.00 | 16.99 | 17.84 | 17.75 | 18.62 | 19.54 |
| | 12H | 17.49 | 18.31 | 18.26 | 19.08 | 20.03 | 17.03 | 17.84 | 17.80 | 18.61 | 19.57 |
| 4H | 2H | 15.19 | 16.16 | 15.94 | 16.91 | 17.82 | 14.85 | 15.82 | 15.60 | 16.57 | 17.48 |
| | 3H | 17.05 | 17.86 | 17.81 | 18.65 | 19.57 | 16.67 | 17.48 | 17.43 | 18.26 | 19.19 |
| | 4H | 17.76 | 18.50 | 18.53 | 19.28 | 20.23 | 17.37 | 18.10 | 18.14 | 18.89 | 19.84 |
| | 6H | 18.27 | 18.90 | 19.06 | 19.71 | 20.67 | 17.87 | 18.51 | 18.66 | 19.32 | 20.28 |
| | 8H | 18.41 | 19.01 | 19.20 | 19.81 | 20.78 | 18.01 | 18.61 | 18.81 | 19.42 | 20.39 |
| | 12H | 18.49 | 19.02 | 19.30 | 19.85 | 20.83 | 18.08 | 18.62 | 18.90 | 19.45 | 20.42 |
| 8H | 4H | 17.97 | 18.56 | 18.76 | 19.37 | 20.34 | 17.62 | 18.21 | 18.41 | 19.02 | 19.99 |
| | 6H | 18.58 | 19.08 | 19.40 | 19.92 | 20.90 | 18.23 | 18.72 | 19.05 | 19.57 | 20.55 |
| | 8H | 18.79 | 19.23 | 19.62 | 20.07 | 21.06 | 18.43 | 18.87 | 19.27 | 19.72 | 20.71 |
| | 12H | 18.92 | 19.30 | 19.75 | 20.14 | 21.19 | 18.55 | 18.94 | 19.38 | 19.77 | 20.82 |
| 12H | 4H | 17.96 | 18.50 | 18.78 | 19.33 | 20.31 | 17.62 | 18.16 | 18.43 | 18.98 | 19.96 |
| | 6H | 18.61 | 19.05 | 19.44 | 19.89 | 20.88 | 18.27 | 18.71 | 19.10 | 19.55 | 20.54 |
| | 8H | 18.85 | 19.23 | 19.68 | 20.07 | 21.11 | 18.50 | 18.89 | 19.34 | 19.72 | 20.77 |