

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: METALUX

Report Number: P894065

Luminaire Tested: 4MB-9HL-RND-UNV-L830

Issue Date: 11/11/2024

Test Information

Test Method: LM-79-2019
Report Number: P894065
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2403-334-1)
Test Lab: INNOVATION CENTER
Issue Date: 11/11/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: 4MB-9HL-RND-UNV-L830
Description: 9000 Lumen 4FT MICROBAY LINEAR BAY with ROUND FROSTED LENS, 80CRI, 3000K CCT
Light Source: -
Ballast/Driver: -

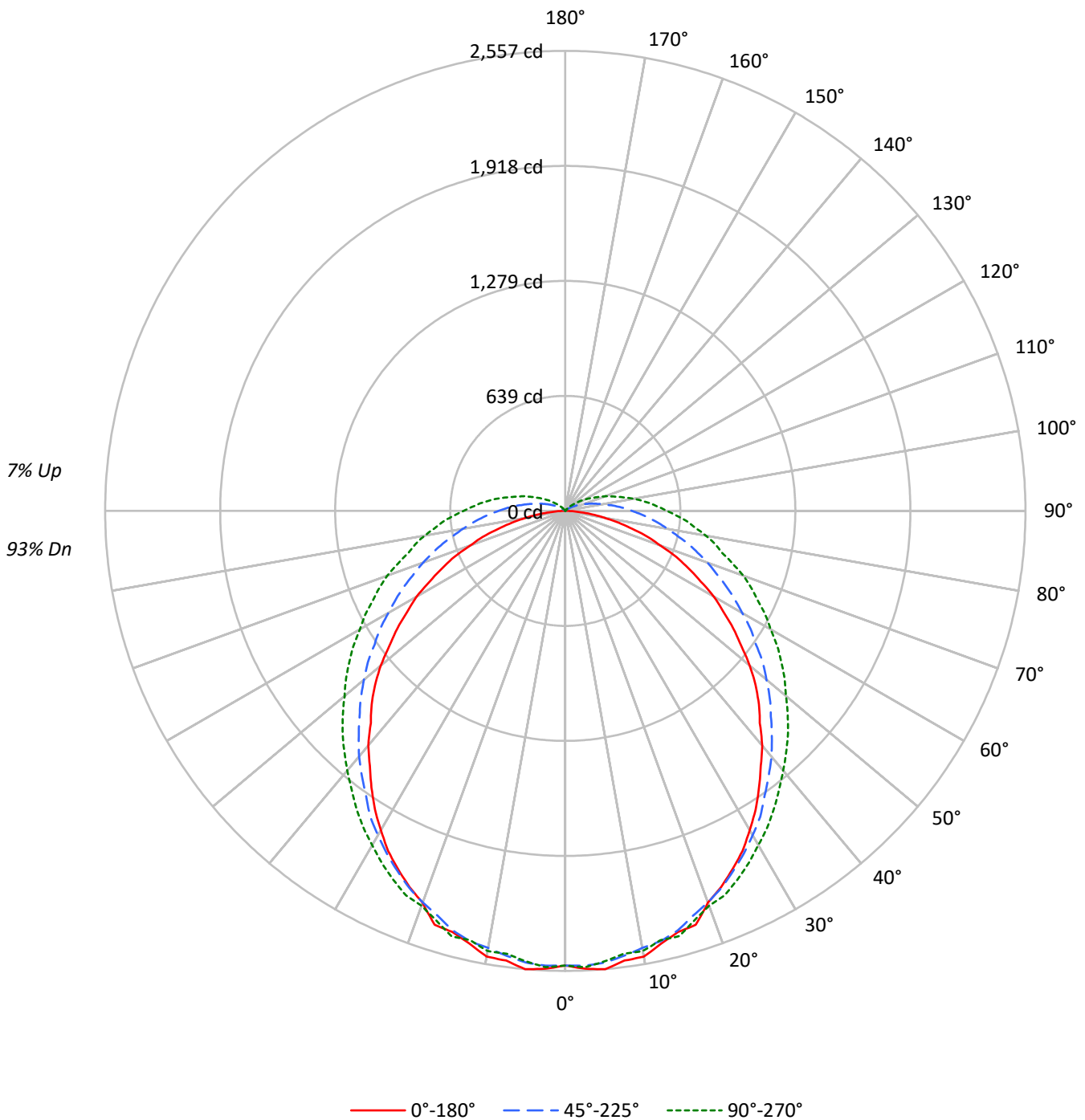
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8323.0 lumens
Efficiency: N/A
Efficacy: 129.2 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.26 / 1.35
Luminous Opening: Rectangular (W 0.38' x L: 3.98' x H: 0')
CIE Type: Direct

Input Watts (W): 64.4
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.996
Total Harmonic Distortion (THDi): 8.94
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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CATALOG NUMBER: 4MB-9HL-RND-UNV-L830

Luminous Intensity Polar Plot





TEST NUMBER: P894065
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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | | | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 117 | 117 | 117 | 117 | 114 | 114 | 114 | 114 | 107 | 107 | 107 | 101 | 101 | 101 | 96 | 96 | 96 | 96 | 96 | 96 |
| 1 | 105 | 100 | 95 | 90 | 102 | 97 | 92 | 88 | 91 | 87 | 84 | 86 | 83 | 80 | 81 | 79 | 77 | 77 | 77 | 77 |
| 2 | 95 | 86 | 79 | 72 | 92 | 84 | 77 | 71 | 79 | 73 | 68 | 74 | 70 | 66 | 70 | 67 | 63 | 63 | 63 | 63 |
| 3 | 86 | 75 | 66 | 60 | 83 | 73 | 65 | 59 | 69 | 62 | 57 | 65 | 60 | 55 | 62 | 57 | 53 | 53 | 53 | 53 |
| 4 | 79 | 66 | 57 | 50 | 76 | 65 | 56 | 49 | 61 | 54 | 48 | 58 | 52 | 47 | 55 | 50 | 45 | 45 | 45 | 45 |
| 5 | 73 | 59 | 50 | 43 | 70 | 58 | 49 | 42 | 55 | 47 | 41 | 52 | 45 | 40 | 49 | 44 | 39 | 39 | 39 | 39 |
| 6 | 67 | 53 | 44 | 37 | 65 | 52 | 43 | 37 | 49 | 42 | 36 | 47 | 40 | 35 | 45 | 39 | 34 | 34 | 34 | 34 |
| 7 | 62 | 48 | 39 | 33 | 60 | 47 | 39 | 33 | 45 | 37 | 32 | 43 | 36 | 31 | 41 | 35 | 30 | 30 | 30 | 30 |
| 8 | 58 | 44 | 35 | 29 | 56 | 43 | 35 | 29 | 41 | 34 | 28 | 39 | 33 | 28 | 38 | 32 | 27 | 27 | 27 | 27 |
| 9 | 54 | 40 | 32 | 26 | 52 | 39 | 32 | 26 | 38 | 31 | 26 | 36 | 30 | 25 | 35 | 29 | 25 | 25 | 25 | 25 |
| 10 | 51 | 37 | 29 | 24 | 49 | 36 | 29 | 24 | 35 | 28 | 23 | 34 | 27 | 23 | 32 | 27 | 22 | 22 | 22 | 22 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 17978 | 17978 | 17978 |
| 5° | 18261 | 17998 | 17948 |
| 10° | 18172 | 17821 | 17946 |
| 15° | 17846 | 17787 | 18025 |
| 20° | 17548 | 17531 | 17679 |
| 25° | 17259 | 17332 | 17759 |
| 30° | 16837 | 17103 | 17625 |
| 35° | 16305 | 16777 | 17560 |
| 40° | 15814 | 16555 | 17499 |
| 45° | 15318 | 16259 | 17609 |
| 50° | 14816 | 16160 | 17720 |
| 55° | 14138 | 16044 | 18181 |
| 60° | 13587 | 16152 | 18751 |
| 65° | 12687 | 16580 | 19888 |
| 70° | 11662 | 17506 | 21905 |
| 75° | 10581 | 19383 | 24818 |
| 80° | 9092 | 23679 | 32537 |
| 85° | 7364 | 38312 | 55675 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 87.5°
 Luminance: 101066 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 239.6 | 2.9 |
| 10°-20° | 682.0 | 8.2 |
| 20°-30° | 1022.0 | 12.3 |
| 30°-40° | 1214.5 | 14.6 |
| 40°-50° | 1257.3 | 15.1 |
| 50°-60° | 1165.2 | 14.0 |
| 60°-70° | 970.1 | 11.7 |
| 70°-80° | 720.0 | 8.7 |
| 80°-90° | 476.2 | 5.7 |
| 90°-100° | 289.8 | 3.5 |
| 100°-110° | 162.5 | 2.0 |
| 110°-120° | 80.0 | 1.0 |
| 120°-130° | 32.6 | 0.4 |
| 130°-140° | 9.4 | 0.1 |
| 140°-150° | 1.4 | 0.0 |
| 150°-160° | 0.3 | 0.0 |
| 160°-170° | 0.3 | 0.0 |
| 170°-180° | 0.1 | 0.0 |
| 0°-30° | 1943.5 | 23.4 |
| 0°-40° | 3158.0 | 37.9 |
| 0°-60° | 5580.5 | 67.0 |
| 0°-90° | 7746.7 | 93.1 |
| 90°-120° | 532.2 | 6.4 |
| 90°-150° | 575.6 | 6.9 |
| 90°-180° | 576.0 | 6.9 |
| 0°-180° | 8323.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2527 | 2527 | 2527 | 2527 | 2527 | |
| 5° | 2557 | 2529 | 2520 | 2533 | 2513 | 242 |
| 15° | 2423 | 2414 | 2415 | 2418 | 2447 | 686 |
| 25° | 2198 | 2196 | 2208 | 2250 | 2262 | 1012 |
| 35° | 1877 | 1891 | 1932 | 1993 | 2022 | 1175 |
| 45° | 1522 | 1544 | 1616 | 1716 | 1750 | 1173 |
| 55° | 1140 | 1188 | 1293 | 1423 | 1466 | 1019 |
| 65° | 754 | 824 | 985 | 1129 | 1181 | 749 |
| 75° | 385 | 502 | 705 | 856 | 903 | 412 |
| 85° | 90 | 253 | 469 | 636 | 682 | 101 |
| 90° | 5 | 164 | 371 | 519 | 565 | 7 |
| 95° | 1 | 102 | 288 | 429 | 476 | 1 |
| 105° | 1 | 34 | 156 | 265 | 302 | 1 |
| 115° | 1 | 8 | 73 | 146 | 174 | 1 |
| 125° | 1 | 2 | 27 | 67 | 86 | 1 |
| 135° | 2 | 1 | 7 | 22 | 30 | 1 |
| 145° | 2 | 1 | 0 | 2 | 4 | 1 |
| 155° | 2 | 2 | 0 | 0 | 0 | 1 |
| 165° | 4 | 2 | 0 | 0 | 0 | 1 |
| 175° | 4 | 2 | 0 | 0 | 0 | 0 |
| 180° | 1 | 1 | 1 | 1 | 1 | |



TEST NUMBER: P894065

CATALOG NUMBER: 4MB-9HL-RND-UNV-L830

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2526.8 | 2526.8 | 2526.8 | 2526.8 | 2526.8 |
| 2.5° | 2547.6 | 2534.9 | 2530.3 | 2524.5 | 2538.4 |
| 5° | 2556.8 | 2529.1 | 2519.9 | 2532.6 | 2512.9 |
| 7.5° | 2521.0 | 2514.1 | 2494.4 | 2501.4 | 2482.9 |
| 10° | 2515.2 | 2477.1 | 2466.7 | 2489.8 | 2484.0 |
| 12.5° | 2463.2 | 2430.9 | 2449.3 | 2465.5 | 2443.6 |
| 15° | 2422.8 | 2413.5 | 2414.7 | 2418.1 | 2447.0 |
| 17.5° | 2412.4 | 2370.7 | 2359.2 | 2388.1 | 2385.8 |
| 20° | 2317.6 | 2309.5 | 2315.3 | 2353.4 | 2334.9 |
| 22.5° | 2262.1 | 2236.7 | 2267.9 | 2304.9 | 2313.0 |
| 25° | 2198.5 | 2196.2 | 2207.8 | 2250.5 | 2262.1 |
| 27.5° | 2131.5 | 2116.4 | 2147.7 | 2197.4 | 2206.6 |
| 30° | 2049.4 | 2043.6 | 2081.8 | 2124.5 | 2145.3 |
| 32.5° | 1968.5 | 1972.0 | 2015.9 | 2051.7 | 2087.6 |
| 35° | 1877.2 | 1891.0 | 1931.5 | 1992.8 | 2021.7 |
| 37.5° | 1784.7 | 1802.0 | 1856.4 | 1926.9 | 1951.2 |
| 40° | 1702.6 | 1706.1 | 1782.4 | 1854.1 | 1884.1 |
| 42.5° | 1599.8 | 1634.4 | 1699.2 | 1794.0 | 1817.1 |
| 45° | 1522.3 | 1544.3 | 1615.9 | 1716.5 | 1750.0 |
| 47.5° | 1434.5 | 1459.9 | 1542.0 | 1640.2 | 1676.1 |
| 50° | 1338.5 | 1361.6 | 1459.9 | 1572.0 | 1600.9 |
| 52.5° | 1232.2 | 1279.6 | 1382.5 | 1498.0 | 1536.2 |
| 55° | 1139.7 | 1188.3 | 1293.4 | 1422.9 | 1465.7 |
| 57.5° | 1040.3 | 1088.9 | 1220.6 | 1340.8 | 1396.3 |
| 60° | 954.8 | 1001.0 | 1135.1 | 1284.2 | 1317.7 |
| 62.5° | 848.4 | 914.3 | 1060.0 | 1206.8 | 1254.1 |
| 65° | 753.6 | 824.2 | 984.8 | 1129.3 | 1181.3 |
| 67.5° | 667.0 | 739.8 | 907.4 | 1062.3 | 1118.9 |
| 70° | 560.6 | 656.6 | 841.5 | 994.1 | 1053.0 |
| 72.5° | 482.0 | 577.9 | 771.0 | 922.4 | 975.6 |
| 75° | 384.9 | 501.7 | 705.1 | 856.5 | 902.8 |
| 77.5° | 304.0 | 430.0 | 636.9 | 806.8 | 853.1 |
| 80° | 221.9 | 365.3 | 577.9 | 740.9 | 794.1 |
| 82.5° | 151.4 | 305.2 | 523.6 | 679.7 | 730.5 |
| 85° | 90.2 | 253.1 | 469.3 | 635.7 | 682.0 |
| 87.5° | 39.3 | 206.9 | 419.6 | 572.2 | 619.6 |
| 90° | 4.6 | 164.1 | 371.0 | 519.0 | 565.2 |
| 92.5° | 1.2 | 131.8 | 328.3 | 471.6 | 516.7 |
| 95° | 1.2 | 101.7 | 287.8 | 428.8 | 476.2 |
| 97.5° | 1.2 | 78.6 | 247.4 | 384.9 | 430.0 |
| 100° | 1.2 | 60.1 | 213.8 | 338.7 | 387.2 |
| 102.5° | 1.2 | 45.1 | 181.5 | 300.5 | 342.1 |
| 105° | 1.2 | 33.5 | 156.0 | 264.7 | 301.7 |
| 107.5° | 1.2 | 24.3 | 130.6 | 231.2 | 268.2 |
| 110° | 1.2 | 17.3 | 109.8 | 200.0 | 237.0 |



TEST NUMBER: P894065

CATALOG NUMBER: 4MB-9HL-RND-UNV-L830

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|------|-------|-------|
| 112.5° | 1.2 | 12.7 | 89.0 | 172.2 | 203.4 |
| 115° | 1.2 | 8.1 | 72.8 | 145.6 | 174.5 |
| 117.5° | 1.2 | 5.8 | 57.8 | 122.5 | 150.3 |
| 120° | 1.2 | 4.6 | 46.2 | 101.7 | 126.0 |
| 122.5° | 1.2 | 3.5 | 35.8 | 83.2 | 106.3 |
| 125° | 1.2 | 2.3 | 26.6 | 67.0 | 85.5 |
| 127.5° | 1.2 | 2.3 | 19.7 | 53.2 | 69.4 |
| 130° | 1.2 | 1.2 | 13.9 | 40.5 | 54.3 |
| 132.5° | 1.2 | 1.2 | 9.2 | 30.1 | 40.5 |
| 135° | 2.3 | 1.2 | 6.9 | 22.0 | 30.1 |
| 137.5° | 2.3 | 1.2 | 4.6 | 15.0 | 20.8 |
| 140° | 2.3 | 1.2 | 2.3 | 9.2 | 12.7 |
| 142.5° | 2.3 | 1.2 | 1.2 | 4.6 | 6.9 |
| 145° | 2.3 | 1.2 | 0.0 | 2.3 | 3.5 |
| 147.5° | 2.3 | 1.2 | 0.0 | 1.2 | 1.2 |
| 150° | 2.3 | 1.2 | 0.0 | 0.0 | 0.0 |
| 152.5° | 2.3 | 1.2 | 0.0 | 0.0 | 0.0 |
| 155° | 2.3 | 2.3 | 0.0 | 0.0 | 0.0 |
| 157.5° | 2.3 | 2.3 | 0.0 | 0.0 | 0.0 |
| 160° | 2.3 | 2.3 | 0.0 | 0.0 | 0.0 |
| 162.5° | 2.3 | 2.3 | 0.0 | 0.0 | 0.0 |
| 165° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 167.5° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 170° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 172.5° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 175° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 177.5° | 3.5 | 2.3 | 0.0 | 0.0 | 0.0 |
| 180° | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |



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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 | 20.27 | 21.80 | 20.74 | 22.26 | 22.74 | 21.84 | 23.38 | 22.31 | 23.83 | 24.32 |
| | 3H | 22.03 | 23.43 | 22.51 | 23.90 | 24.42 | 24.43 | 25.83 | 24.91 | 26.29 | 26.82 |
| | 4H | 22.69 | 24.02 | 23.19 | 24.50 | 25.04 | 25.68 | 27.02 | 26.19 | 27.50 | 28.03 |
| | 6H | 23.17 | 24.41 | 23.68 | 24.90 | 25.45 | 27.07 | 28.31 | 27.58 | 28.80 | 29.36 |
| | 8H | 23.31 | 24.50 | 23.84 | 25.02 | 25.58 | 27.80 | 28.98 | 28.32 | 29.50 | 30.06 |
| | 12H | 23.41 | 24.55 | 23.95 | 25.07 | 25.66 | 28.64 | 29.78 | 29.17 | 30.29 | 30.88 |
| 4H | 2H | 21.22 | 22.55 | 21.73 | 23.04 | 23.57 | 22.41 | 23.74 | 22.91 | 24.23 | 24.76 |
| | 3H | 23.26 | 24.40 | 23.78 | 24.92 | 25.48 | 25.28 | 26.42 | 25.79 | 26.94 | 27.50 |
| | 4H | 24.08 | 25.12 | 24.61 | 25.65 | 26.24 | 26.76 | 27.80 | 27.29 | 28.34 | 28.93 |
| | 6H | 24.73 | 25.65 | 25.28 | 26.21 | 26.81 | 28.38 | 29.30 | 28.93 | 29.86 | 30.47 |
| | 8H | 24.95 | 25.82 | 25.51 | 26.38 | 27.00 | 29.23 | 30.10 | 29.79 | 30.66 | 31.28 |
| | 12H | 25.12 | 25.91 | 25.70 | 26.50 | 27.12 | 30.23 | 31.01 | 30.81 | 31.60 | 32.23 |
| 8H | 4H | 24.92 | 25.79 | 25.48 | 26.35 | 26.97 | 27.13 | 28.00 | 27.69 | 28.56 | 29.18 |
| | 6H | 25.85 | 26.58 | 26.44 | 27.19 | 27.81 | 29.01 | 29.74 | 29.60 | 30.35 | 30.97 |
| | 8H | 26.23 | 26.90 | 26.83 | 27.51 | 28.15 | 30.07 | 30.73 | 30.67 | 31.35 | 31.98 |
| | 12H | 26.55 | 27.15 | 27.16 | 27.75 | 28.45 | 31.32 | 31.92 | 31.93 | 32.52 | 33.23 |
| 12H | 4H | 25.19 | 25.97 | 25.77 | 26.56 | 27.19 | 27.17 | 27.96 | 27.75 | 28.55 | 29.17 |
| | 6H | 26.27 | 26.94 | 26.88 | 27.55 | 28.19 | 29.12 | 29.78 | 29.72 | 30.40 | 31.04 |
| | 8H | 26.81 | 27.41 | 27.42 | 28.01 | 28.71 | 30.29 | 30.89 | 30.90 | 31.49 | 32.19 |