

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: P893996

Luminaire Tested: 4MB-9HL-ACL-UNV-L850

Issue Date: 11/11/2024

Test Information

Test Method: LM-79-2019
Report Number: P893996
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2404-077-20)
Test Lab: INNOVATION CENTER
Issue Date: 11/11/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: 4MB-9HL-ACL-UNV-L850
Description: 9000 Lumen 4FT MICROBAY LINEAR BAY with AISLE OPTICS WITH CLEAR LENS, 80CRI, 5000K (C)
Light Source: -
Ballast/Driver: -

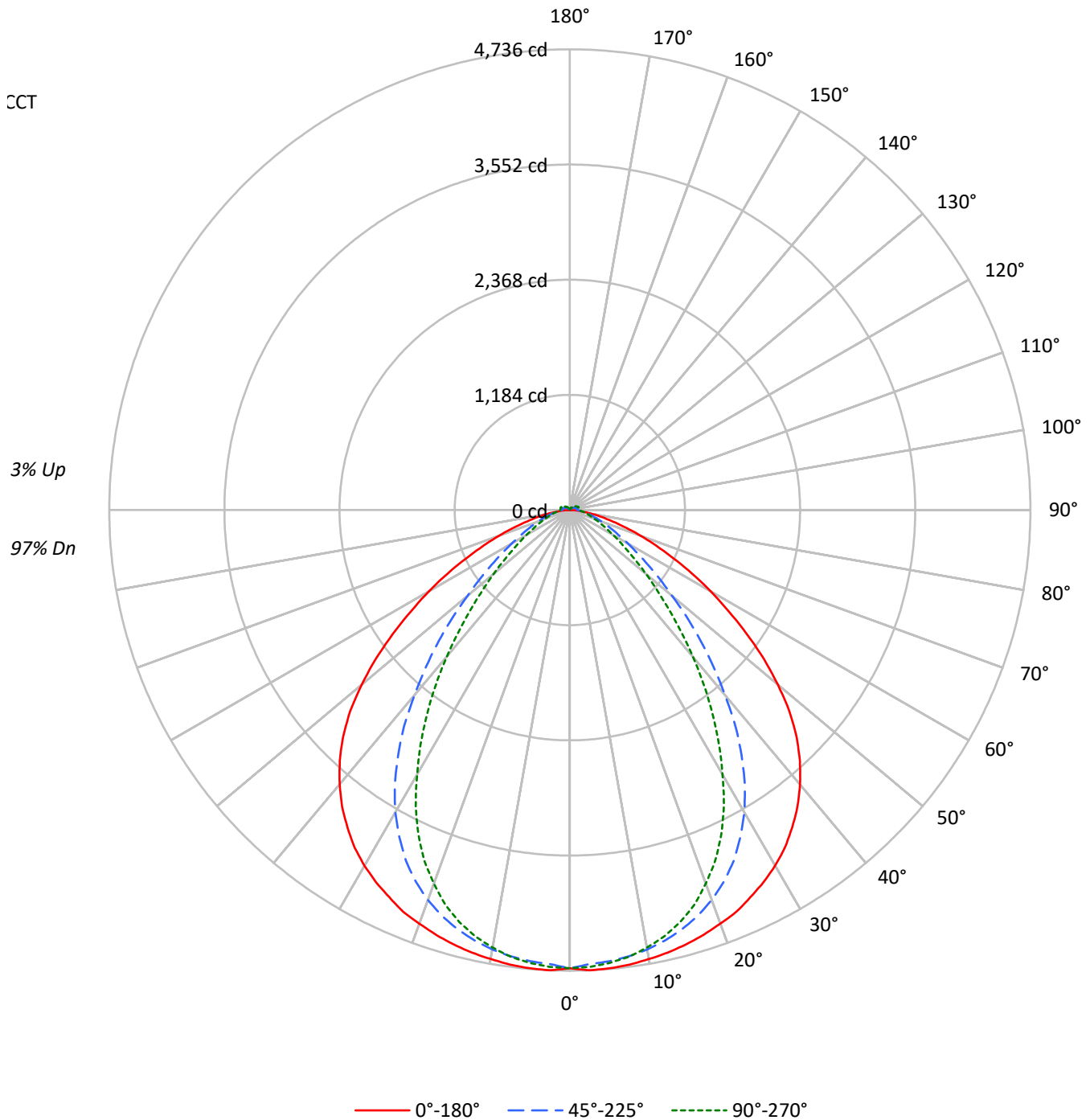
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9554.0 lumens
Efficiency: N/A
Efficacy: 148.4 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.05 / 1.15
Luminous Opening: Rectangular w/ Sides (W: 0.27' x L: 3.98' x H: 0.08')
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

TEST NUMBER: P893996
CATALOG NUMBER: 4MB-9HL-ACL-UNV-L850

Luminous Intensity Polar Plot





TEST NUMBER: P893996
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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 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | | | | | | | | | | | | | | | | |
| RCR | 0 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 110 | 110 | 110 | 104 | 104 | 104 | 100 | 100 | 100 | 97 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 110 | 106 | 102 | 99 | 107 | 103 | 100 | 97 | 99 | 96 | 94 | 94 | 92 | 90 | 90 | 89 | 87 | 85 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 101 | 94 | 89 | 84 | 99 | 92 | 87 | 83 | 88 | 84 | 80 | 85 | 81 | 78 | 82 | 79 | 76 | 74 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 94 | 85 | 78 | 72 | 91 | 83 | 76 | 71 | 80 | 74 | 70 | 77 | 72 | 68 | 74 | 70 | 67 | 65 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | 87 | 76 | 69 | 63 | 84 | 75 | 68 | 62 | 72 | 66 | 61 | 70 | 64 | 60 | 67 | 63 | 59 | 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | 81 | 69 | 61 | 55 | 78 | 68 | 60 | 55 | 66 | 59 | 54 | 63 | 58 | 53 | 61 | 56 | 52 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | 75 | 63 | 55 | 49 | 73 | 62 | 54 | 49 | 60 | 53 | 48 | 58 | 52 | 48 | 56 | 51 | 47 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | 70 | 58 | 50 | 44 | 68 | 57 | 49 | 44 | 55 | 48 | 43 | 53 | 47 | 43 | 52 | 47 | 42 | 41 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 65 | 53 | 45 | 40 | 64 | 52 | 45 | 40 | 51 | 44 | 39 | 49 | 43 | 39 | 48 | 43 | 39 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | 61 | 49 | 41 | 36 | 60 | 48 | 41 | 36 | 47 | 40 | 36 | 46 | 40 | 36 | 45 | 39 | 35 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | 58 | 45 | 38 | 33 | 56 | 45 | 38 | 33 | 44 | 37 | 33 | 43 | 37 | 33 | 42 | 36 | 32 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 47968 | 47968 | 47968 |
| 5° | 48256 | 46634 | 46507 |
| 10° | 48294 | 45534 | 44763 |
| 15° | 48459 | 44229 | 42649 |
| 20° | 48663 | 42566 | 39744 |
| 25° | 48883 | 40315 | 36107 |
| 30° | 49058 | 37128 | 31277 |
| 35° | 48832 | 32828 | 26074 |
| 40° | 48107 | 27531 | 20728 |
| 45° | 46519 | 22178 | 15673 |
| 50° | 43139 | 16954 | 11822 |
| 55° | 38297 | 12988 | 8805 |
| 60° | 32864 | 9991 | 6815 |
| 65° | 27112 | 7831 | 5392 |
| 70° | 21898 | 6275 | 4410 |
| 75° | 16665 | 5126 | 3762 |
| 80° | 12467 | 4200 | 3320 |
| 85° | 8486 | 3556 | 3018 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 46519 cd/sqm



TEST NUMBER: P893996
 CATALOG NUMBER: 4MB-9HL-ACL-UNV-L850

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 445.5 | 4.7 |
| 10°-20° | 1265.1 | 13.2 |
| 20°-30° | 1841.5 | 19.3 |
| 30°-40° | 1976.2 | 20.7 |
| 40°-50° | 1635.2 | 17.1 |
| 50°-60° | 1083.8 | 11.3 |
| 60°-70° | 617.5 | 6.5 |
| 70°-80° | 306.2 | 3.2 |
| 80°-90° | 123.8 | 1.3 |
| 90°-100° | 72.7 | 0.8 |
| 100°-110° | 64.7 | 0.7 |
| 110°-120° | 48.8 | 0.5 |
| 120°-130° | 32.4 | 0.3 |
| 130°-140° | 19.9 | 0.2 |
| 140°-150° | 11.4 | 0.1 |
| 150°-160° | 5.8 | 0.1 |
| 160°-170° | 2.5 | 0.0 |
| 170°-180° | 0.6 | 0.0 |
| 0°-30° | 3552.2 | 37.2 |
| 0°-40° | 5528.5 | 57.9 |
| 0°-60° | 8247.5 | 86.3 |
| 0°-90° | 9295.1 | 97.3 |
| 90°-120° | 186.3 | 2.0 |
| 90°-150° | 250.1 | 2.6 |
| 90°-180° | 259.0 | 2.7 |
| 0°-180° | 9554.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4710 | 4710 | 4710 | 4710 | 4710 | |
| 5° | 4729 | 4717 | 4656 | 4691 | 4674 | 450 |
| 15° | 4622 | 4585 | 4461 | 4420 | 4385 | 1306 |
| 25° | 4393 | 4278 | 3983 | 3766 | 3683 | 2027 |
| 35° | 3985 | 3669 | 3078 | 2675 | 2558 | 2490 |
| 45° | 3298 | 2678 | 1904 | 1534 | 1430 | 2527 |
| 55° | 2221 | 1571 | 979 | 774 | 718 | 1988 |
| 65° | 1176 | 788 | 490 | 395 | 374 | 1181 |
| 75° | 457 | 340 | 245 | 214 | 208 | 504 |
| 85° | 90 | 97 | 113 | 119 | 118 | 104 |
| 90° | 12 | 40 | 77 | 94 | 97 | 11 |
| 95° | 14 | 42 | 78 | 94 | 97 | 12 |
| 105° | 11 | 31 | 70 | 90 | 95 | 12 |
| 115° | 7 | 21 | 54 | 77 | 83 | 7 |
| 125° | 4 | 14 | 39 | 57 | 64 | 4 |
| 135° | 3 | 11 | 26 | 40 | 44 | 2 |
| 145° | 4 | 8 | 18 | 28 | 31 | 2 |
| 155° | 4 | 8 | 12 | 17 | 22 | 2 |
| 165° | 5 | 6 | 8 | 10 | 13 | 1 |
| 175° | 5 | 6 | 7 | 7 | 6 | 0 |
| 180° | 6 | 6 | 6 | 6 | 6 | |



TEST NUMBER: P893996

CATALOG NUMBER: 4MB-9HL-ACL-UNV-L850

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4710.0 | 4710.0 | 4710.0 | 4710.0 | 4710.0 |
| 2.5° | 4736.5 | 4726.1 | 4672.1 | 4712.8 | 4700.5 |
| 5° | 4728.9 | 4716.6 | 4656.0 | 4691.0 | 4674.0 |
| 7.5° | 4712.8 | 4697.6 | 4629.4 | 4653.1 | 4632.3 |
| 10° | 4687.2 | 4668.3 | 4586.8 | 4591.5 | 4567.9 |
| 12.5° | 4659.7 | 4630.4 | 4530.9 | 4517.7 | 4488.3 |
| 15° | 4621.9 | 4584.9 | 4460.8 | 4420.1 | 4385.0 |
| 17.5° | 4578.3 | 4527.1 | 4373.7 | 4301.7 | 4256.2 |
| 20° | 4524.3 | 4456.1 | 4265.7 | 4155.8 | 4085.7 |
| 22.5° | 4472.2 | 4371.8 | 4136.8 | 3979.6 | 3905.7 |
| 25° | 4392.6 | 4278.0 | 3983.4 | 3766.4 | 3683.1 |
| 27.5° | 4314.0 | 4159.6 | 3794.9 | 3528.7 | 3432.1 |
| 30° | 4222.1 | 4019.4 | 3588.4 | 3260.6 | 3141.2 |
| 32.5° | 4116.0 | 3865.9 | 3348.7 | 2982.1 | 2855.1 |
| 35° | 3985.3 | 3668.9 | 3077.8 | 2675.2 | 2557.7 |
| 37.5° | 3845.1 | 3451.9 | 2798.3 | 2383.4 | 2262.1 |
| 40° | 3682.1 | 3221.8 | 2481.9 | 2080.3 | 1969.4 |
| 42.5° | 3501.2 | 2958.4 | 2188.3 | 1795.1 | 1684.3 |
| 45° | 3297.5 | 2678.0 | 1904.1 | 1533.7 | 1429.5 |
| 47.5° | 3063.6 | 2391.0 | 1629.3 | 1297.8 | 1210.6 |
| 50° | 2790.7 | 2103.9 | 1371.7 | 1089.4 | 1025.0 |
| 52.5° | 2516.0 | 1834.0 | 1164.2 | 923.6 | 854.5 |
| 55° | 2221.4 | 1570.6 | 978.6 | 773.9 | 718.0 |
| 57.5° | 1936.3 | 1337.6 | 817.5 | 648.9 | 610.1 |
| 60° | 1672.0 | 1129.2 | 691.5 | 547.5 | 516.3 |
| 62.5° | 1418.1 | 952.0 | 578.8 | 463.2 | 435.8 |
| 65° | 1175.6 | 788.1 | 489.8 | 395.0 | 374.2 |
| 67.5° | 962.5 | 658.4 | 413.0 | 337.2 | 321.1 |
| 70° | 777.7 | 532.4 | 347.7 | 288.9 | 275.7 |
| 72.5° | 605.3 | 427.2 | 291.8 | 250.1 | 238.7 |
| 75° | 456.6 | 340.1 | 245.3 | 214.1 | 207.5 |
| 77.5° | 343.9 | 264.3 | 202.7 | 184.7 | 180.0 |
| 80° | 237.8 | 197.0 | 167.7 | 160.1 | 157.3 |
| 82.5° | 151.6 | 141.1 | 137.4 | 137.4 | 137.4 |
| 85° | 90.0 | 96.6 | 112.7 | 119.4 | 118.4 |
| 87.5° | 42.6 | 63.5 | 90.9 | 103.3 | 105.1 |
| 90° | 12.3 | 39.8 | 76.7 | 93.8 | 96.6 |
| 92.5° | 14.2 | 40.7 | 76.7 | 93.8 | 96.6 |
| 95° | 14.2 | 41.7 | 77.7 | 93.8 | 96.6 |
| 97.5° | 14.2 | 39.8 | 76.7 | 94.7 | 97.6 |
| 100° | 14.2 | 38.8 | 75.8 | 93.8 | 97.6 |
| 102.5° | 12.3 | 36.0 | 72.9 | 92.8 | 96.6 |
| 105° | 11.4 | 31.3 | 70.1 | 90.0 | 94.7 |
| 107.5° | 9.5 | 28.4 | 67.3 | 87.2 | 92.8 |
| 110° | 8.5 | 25.6 | 63.5 | 84.3 | 90.9 |



TEST NUMBER: P893996

CATALOG NUMBER: 4MB-9HL-ACL-UNV-L850

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|------|-------|------|
| 112.5° | 7.6 | 22.7 | 58.7 | 81.5 | 87.2 |
| 115° | 6.6 | 20.8 | 54.0 | 76.7 | 83.4 |
| 117.5° | 5.7 | 18.9 | 49.3 | 72.0 | 79.6 |
| 120° | 4.7 | 17.1 | 45.5 | 67.3 | 73.9 |
| 122.5° | 4.7 | 16.1 | 41.7 | 61.6 | 69.2 |
| 125° | 3.8 | 14.2 | 38.8 | 56.8 | 63.5 |
| 127.5° | 3.8 | 13.3 | 35.0 | 52.1 | 57.8 |
| 130° | 2.8 | 13.3 | 32.2 | 48.3 | 54.0 |
| 132.5° | 2.8 | 12.3 | 28.4 | 43.6 | 49.3 |
| 135° | 2.8 | 11.4 | 26.5 | 39.8 | 44.5 |
| 137.5° | 2.8 | 11.4 | 23.7 | 36.9 | 41.7 |
| 140° | 3.8 | 10.4 | 20.8 | 33.2 | 37.9 |
| 142.5° | 3.8 | 9.5 | 19.9 | 30.3 | 34.1 |
| 145° | 3.8 | 8.5 | 18.0 | 27.5 | 31.3 |
| 147.5° | 3.8 | 8.5 | 16.1 | 24.6 | 28.4 |
| 150° | 3.8 | 7.6 | 15.2 | 21.8 | 25.6 |
| 152.5° | 3.8 | 7.6 | 14.2 | 18.9 | 23.7 |
| 155° | 3.8 | 7.6 | 12.3 | 17.1 | 21.8 |
| 157.5° | 3.8 | 6.6 | 11.4 | 15.2 | 18.9 |
| 160° | 4.7 | 6.6 | 10.4 | 13.3 | 17.1 |
| 162.5° | 4.7 | 6.6 | 9.5 | 12.3 | 15.2 |
| 165° | 4.7 | 5.7 | 8.5 | 10.4 | 13.3 |
| 167.5° | 4.7 | 5.7 | 8.5 | 9.5 | 11.4 |
| 170° | 4.7 | 5.7 | 7.6 | 7.6 | 8.5 |
| 172.5° | 4.7 | 5.7 | 6.6 | 7.6 | 5.7 |
| 175° | 4.7 | 5.7 | 6.6 | 6.6 | 5.7 |
| 177.5° | 4.7 | 5.7 | 5.7 | 6.6 | 5.7 |
| 180° | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 |



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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 | 22.11 | 23.50 | 22.52 | 23.87 | 24.26 | 17.23 | 18.62 | 17.64 | 18.99 | 19.38 |
| | 3H | 23.21 | 24.45 | 23.63 | 24.83 | 25.26 | 18.38 | 19.61 | 18.80 | 20.00 | 20.43 |
| | 4H | 23.50 | 24.66 | 23.95 | 25.07 | 25.51 | 18.88 | 20.04 | 19.33 | 20.44 | 20.89 |
| | 6H | 23.65 | 24.72 | 24.11 | 25.14 | 25.60 | 19.39 | 20.46 | 19.85 | 20.88 | 21.34 |
| | 8H | 23.66 | 24.68 | 24.14 | 25.12 | 25.59 | 19.65 | 20.67 | 20.13 | 21.11 | 21.58 |
| | 12H | 23.65 | 24.62 | 24.13 | 25.06 | 25.56 | 19.95 | 20.92 | 20.42 | 21.36 | 21.85 |
| 4H | 2H | 22.09 | 23.24 | 22.53 | 23.65 | 24.10 | 17.73 | 18.89 | 18.18 | 19.30 | 19.75 |
| | 3H | 23.32 | 24.28 | 23.78 | 24.73 | 25.20 | 19.05 | 20.01 | 19.51 | 20.47 | 20.93 |
| | 4H | 23.69 | 24.55 | 24.17 | 25.02 | 25.53 | 19.65 | 20.51 | 20.13 | 20.98 | 21.48 |
| | 6H | 23.92 | 24.67 | 24.43 | 25.16 | 25.69 | 20.28 | 21.02 | 20.78 | 21.52 | 22.05 |
| | 8H | 23.96 | 24.66 | 24.47 | 25.15 | 25.68 | 20.60 | 21.30 | 21.11 | 21.80 | 22.33 |
| | 12H | 23.97 | 24.59 | 24.49 | 25.12 | 25.65 | 20.98 | 21.60 | 21.51 | 22.13 | 22.67 |
| 8H | 4H | 23.68 | 24.37 | 24.19 | 24.87 | 25.40 | 19.89 | 20.59 | 20.41 | 21.09 | 21.62 |
| | 6H | 23.95 | 24.53 | 24.49 | 25.07 | 25.61 | 20.63 | 21.20 | 21.17 | 21.75 | 22.29 |
| | 8H | 24.01 | 24.53 | 24.57 | 25.09 | 25.64 | 21.03 | 21.55 | 21.60 | 22.11 | 22.66 |
| | 12H | 24.05 | 24.51 | 24.61 | 25.05 | 25.68 | 21.53 | 21.99 | 22.08 | 22.53 | 23.16 |
| 12H | 4H | 23.65 | 24.28 | 24.18 | 24.81 | 25.34 | 19.91 | 20.53 | 20.44 | 21.06 | 21.60 |
| | 6H | 23.93 | 24.45 | 24.49 | 25.00 | 25.56 | 20.66 | 21.18 | 21.22 | 21.74 | 22.29 |
| | 8H | 24.02 | 24.48 | 24.58 | 25.02 | 25.65 | 21.13 | 21.59 | 21.68 | 22.13 | 22.75 |