

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: P906629

Luminaire Tested: DFN2DIP-SQ3F0-120D040US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906629
REPORT IS A COMBINATION OF REPORTS P901397 AND P898289
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-120D040US835-FLLONL
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

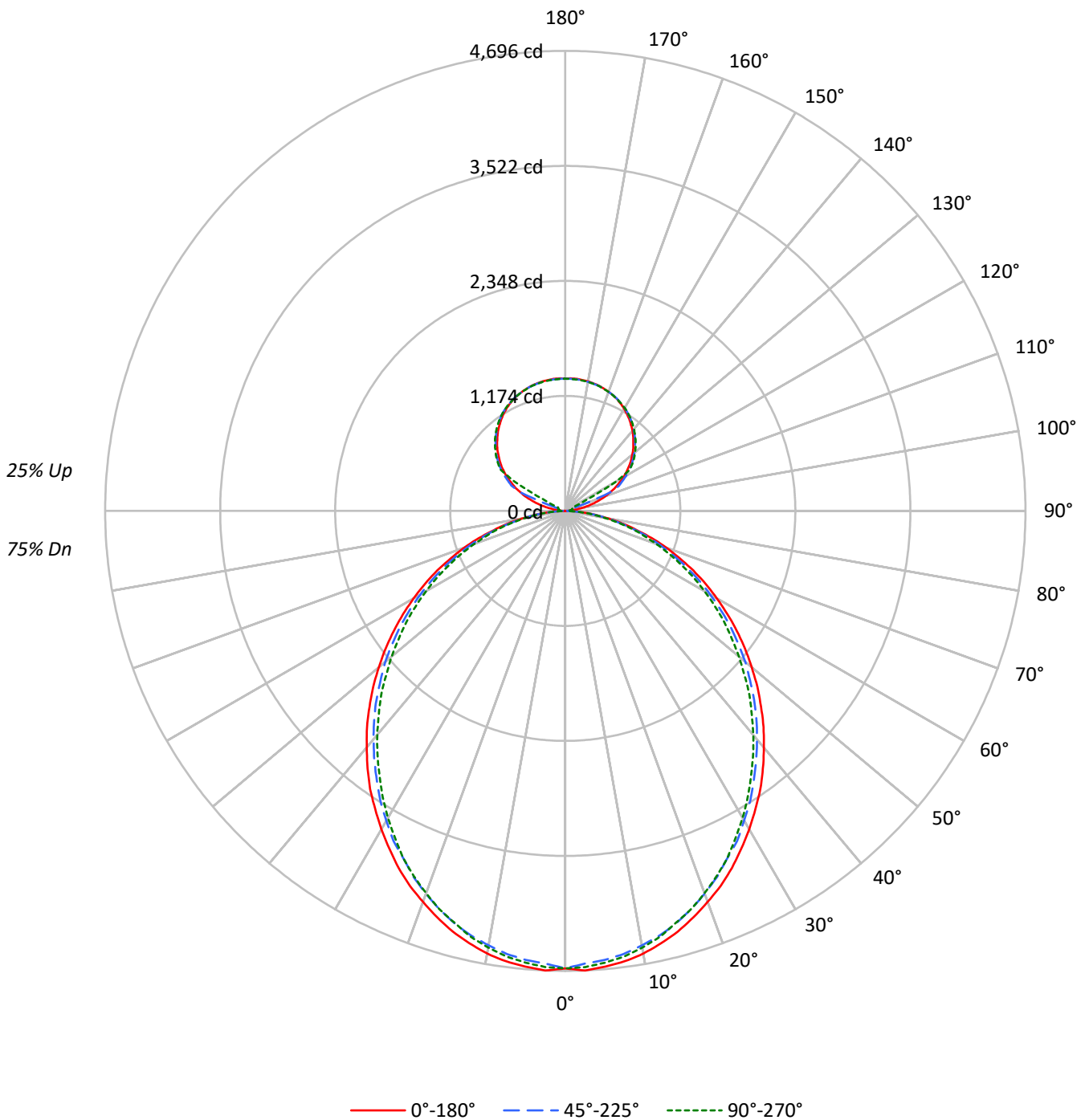
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15840.0 lumens
Efficiency: N/A
Efficacy: 101.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 156.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9957
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: P906629

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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 | 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° | 5350 | 5350 | 5350 |
| 5° | 5355 | 5272 | 5309 |
| 10° | 5308 | 5197 | 5236 |
| 15° | 5227 | 5108 | 5122 |
| 20° | 5118 | 4986 | 5005 |
| 25° | 5010 | 4840 | 4870 |
| 30° | 4875 | 4704 | 4699 |
| 35° | 4746 | 4545 | 4519 |
| 40° | 4589 | 4383 | 4347 |
| 45° | 4432 | 4221 | 4171 |
| 50° | 4260 | 4051 | 3967 |
| 55° | 4080 | 3854 | 3780 |
| 60° | 3876 | 3621 | 3565 |
| 65° | 3653 | 3379 | 3311 |
| 70° | 3368 | 3083 | 3038 |
| 75° | 2976 | 2729 | 2782 |
| 80° | 2501 | 2277 | 2300 |
| 85° | 1761 | 1509 | 1505 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4432 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 439.5 | 2.8 |
| 10°-20° | 1236.5 | 7.8 |
| 20°-30° | 1817.2 | 11.5 |
| 30°-40° | 2110.5 | 13.3 |
| 40°-50° | 2107.9 | 13.3 |
| 50°-60° | 1838.0 | 11.6 |
| 60°-70° | 1358.7 | 8.6 |
| 70°-80° | 768.7 | 4.9 |
| 80°-90° | 205.3 | 1.3 |
| 90°-100° | 44.5 | 0.3 |
| 100°-110° | 165.9 | 1.0 |
| 110°-120° | 440.1 | 2.8 |
| 120°-130° | 729.9 | 4.6 |
| 130°-140° | 775.4 | 4.9 |
| 140°-150° | 720.6 | 4.5 |
| 150°-160° | 579.4 | 3.7 |
| 160°-170° | 373.3 | 2.4 |
| 170°-180° | 128.5 | 0.8 |
| 0°-30° | 3493.1 | 22.1 |
| 0°-40° | 5603.7 | 35.4 |
| 0°-60° | 9549.6 | 60.3 |
| 0°-90° | 11882.4 | 75.0 |
| 90°-120° | 650.5 | 4.1 |
| 90°-150° | 2876.4 | 18.2 |
| 90°-180° | 3958.0 | 25.0 |
| 0°-180° | 15840.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4669 | 4669 | 4669 | 4669 | 4669 | |
| 5° | 4669 | 4652 | 4602 | 4638 | 4629 | 443 |
| 15° | 4445 | 4418 | 4360 | 4378 | 4355 | 1252 |
| 25° | 4023 | 3987 | 3911 | 3920 | 3911 | 1851 |
| 35° | 3471 | 3426 | 3354 | 3327 | 3304 | 2167 |
| 45° | 2824 | 2793 | 2725 | 2676 | 2658 | 2180 |
| 55° | 2137 | 2110 | 2056 | 2003 | 1980 | 1911 |
| 65° | 1442 | 1414 | 1370 | 1329 | 1307 | 1425 |
| 75° | 754 | 746 | 723 | 696 | 705 | 805 |
| 85° | 184 | 180 | 175 | 162 | 157 | 205 |
| 90° | 1 | 12 | 20 | 24 | 26 | 15 |
| 95° | 63 | 31 | 38 | 43 | 42 | 75 |
| 105° | 297 | 326 | 60 | 70 | 74 | 317 |
| 115° | 562 | 578 | 603 | 150 | 80 | 553 |
| 125° | 794 | 807 | 825 | 832 | 835 | 708 |
| 135° | 983 | 998 | 1007 | 1017 | 1015 | 759 |
| 145° | 1140 | 1139 | 1156 | 1162 | 1158 | 713 |
| 155° | 1255 | 1246 | 1258 | 1264 | 1256 | 578 |
| 165° | 1323 | 1317 | 1320 | 1326 | 1320 | 374 |
| 175° | 1353 | 1346 | 1348 | 1355 | 1345 | 129 |
| 180° | 1350 | 1350 | 1350 | 1350 | 1350 | |



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CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US835-FLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4669.3 | 4669.3 | 4669.3 | 4669.3 | 4669.3 |
| 2.5° | 4696.4 | 4674.0 | 4624.5 | 4669.3 | 4660.7 |
| 5° | 4669.3 | 4651.6 | 4602.1 | 4637.8 | 4629.2 |
| 7.5° | 4637.8 | 4611.1 | 4561.6 | 4597.8 | 4588.8 |
| 10° | 4588.8 | 4557.3 | 4503.5 | 4539.2 | 4525.9 |
| 12.5° | 4521.1 | 4494.4 | 4440.6 | 4463.0 | 4453.9 |
| 15° | 4444.9 | 4418.2 | 4359.6 | 4377.7 | 4355.3 |
| 17.5° | 4350.6 | 4323.9 | 4265.3 | 4287.7 | 4265.3 |
| 20° | 4247.2 | 4220.5 | 4157.7 | 4171.0 | 4153.4 |
| 22.5° | 4144.3 | 4103.8 | 4045.2 | 4045.2 | 4036.2 |
| 25° | 4022.8 | 3987.1 | 3910.9 | 3919.5 | 3910.9 |
| 27.5° | 3888.0 | 3856.6 | 3798.5 | 3785.1 | 3762.8 |
| 30° | 3753.7 | 3717.5 | 3650.3 | 3637.0 | 3618.9 |
| 32.5° | 3609.8 | 3583.2 | 3511.2 | 3484.1 | 3466.0 |
| 35° | 3470.7 | 3426.0 | 3354.0 | 3326.9 | 3304.5 |
| 37.5° | 3313.5 | 3273.1 | 3201.1 | 3169.7 | 3147.3 |
| 40° | 3152.1 | 3115.9 | 3043.9 | 3003.9 | 2985.8 |
| 42.5° | 2994.9 | 2958.7 | 2887.2 | 2842.0 | 2815.3 |
| 45° | 2824.3 | 2792.9 | 2725.2 | 2676.2 | 2658.1 |
| 47.5° | 2658.1 | 2626.6 | 2554.7 | 2505.2 | 2478.5 |
| 50° | 2482.8 | 2460.4 | 2397.5 | 2334.6 | 2312.2 |
| 52.5° | 2312.2 | 2280.8 | 2222.7 | 2173.1 | 2141.7 |
| 55° | 2137.4 | 2110.3 | 2056.4 | 2002.6 | 1980.2 |
| 57.5° | 1962.1 | 1939.7 | 1881.1 | 1827.3 | 1809.2 |
| 60° | 1786.8 | 1769.2 | 1706.3 | 1656.8 | 1643.4 |
| 62.5° | 1616.3 | 1584.8 | 1540.1 | 1495.3 | 1477.2 |
| 65° | 1441.5 | 1414.3 | 1369.5 | 1329.0 | 1306.7 |
| 67.5° | 1261.9 | 1239.0 | 1199.0 | 1167.6 | 1149.5 |
| 70° | 1095.6 | 1077.5 | 1037.0 | 1005.6 | 988.0 |
| 72.5° | 925.1 | 907.0 | 884.6 | 853.2 | 839.8 |
| 75° | 754.1 | 745.5 | 722.6 | 696.0 | 705.0 |
| 77.5° | 601.6 | 583.5 | 574.5 | 561.1 | 547.8 |
| 80° | 449.2 | 444.4 | 435.4 | 422.1 | 413.0 |
| 82.5° | 305.3 | 305.3 | 301.1 | 283.0 | 283.0 |
| 85° | 183.9 | 179.6 | 175.3 | 161.5 | 157.2 |
| 87.5° | 81.0 | 71.9 | 62.9 | 49.5 | 44.8 |
| 90° | 0.9 | 11.7 | 19.5 | 24.5 | 26.3 |
| 92.5° | 24.5 | 20.5 | 23.4 | 25.4 | 26.3 |
| 95° | 63.4 | 31.2 | 38.0 | 43.0 | 42.0 |
| 97.5° | 114.3 | 34.2 | 49.8 | 52.8 | 53.7 |
| 100° | 172.9 | 39.1 | 55.7 | 63.4 | 65.4 |
| 102.5° | 237.3 | 235.5 | 57.6 | 68.3 | 71.3 |
| 105° | 296.9 | 326.3 | 59.6 | 70.3 | 74.2 |
| 107.5° | 366.3 | 390.7 | 61.6 | 72.3 | 76.2 |
| 110° | 432.8 | 453.2 | 171.0 | 73.3 | 77.1 |



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CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US835-FLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 495.3 | 512.8 | 496.2 | 75.2 | 78.2 |
| 115° | 561.6 | 578.2 | 602.7 | 150.4 | 80.2 |
| 117.5° | 619.3 | 638.8 | 655.5 | 515.7 | 259.8 |
| 120° | 683.8 | 698.4 | 716.0 | 727.8 | 595.9 |
| 122.5° | 738.4 | 754.1 | 773.7 | 779.5 | 780.5 |
| 125° | 794.1 | 806.9 | 825.4 | 832.3 | 835.2 |
| 127.5° | 844.9 | 858.6 | 873.3 | 883.1 | 884.0 |
| 130° | 892.8 | 908.5 | 919.1 | 929.9 | 929.0 |
| 132.5° | 941.6 | 954.4 | 965.1 | 973.9 | 973.0 |
| 135° | 982.7 | 998.4 | 1007.1 | 1016.9 | 1015.0 |
| 137.5° | 1025.6 | 1037.3 | 1047.2 | 1056.9 | 1054.0 |
| 140° | 1067.6 | 1075.5 | 1086.2 | 1095.0 | 1090.1 |
| 142.5° | 1102.9 | 1109.7 | 1122.4 | 1130.1 | 1125.3 |
| 145° | 1140.0 | 1139.0 | 1155.5 | 1162.4 | 1157.5 |
| 147.5° | 1172.1 | 1169.2 | 1185.8 | 1190.7 | 1186.9 |
| 150° | 1203.4 | 1196.6 | 1212.3 | 1218.1 | 1213.2 |
| 152.5° | 1229.8 | 1222.0 | 1236.6 | 1242.5 | 1235.7 |
| 155° | 1255.2 | 1246.5 | 1258.2 | 1264.0 | 1256.2 |
| 157.5° | 1275.7 | 1267.9 | 1276.8 | 1283.6 | 1275.7 |
| 160° | 1293.3 | 1287.4 | 1293.3 | 1299.1 | 1292.3 |
| 162.5° | 1308.9 | 1303.1 | 1308.0 | 1314.8 | 1306.0 |
| 165° | 1322.6 | 1316.8 | 1319.7 | 1326.5 | 1319.7 |
| 167.5° | 1333.4 | 1327.4 | 1330.5 | 1337.3 | 1328.5 |
| 170° | 1342.2 | 1336.3 | 1338.2 | 1345.1 | 1336.3 |
| 172.5° | 1348.0 | 1342.2 | 1344.2 | 1351.0 | 1342.2 |
| 175° | 1352.8 | 1346.0 | 1348.0 | 1354.8 | 1345.1 |
| 177.5° | 1354.8 | 1348.0 | 1349.0 | 1355.9 | 1347.1 |
| 180° | 1350.0 | 1350.0 | 1350.0 | 1350.0 | 1350.0 |



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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 | 15.11 | 16.25 | 15.82 | 16.98 | 17.84 | 14.67 | 15.81 | 15.38 | 16.54 | 17.40 |
| | 3H | 16.79 | 17.82 | 17.51 | 18.55 | 19.45 | 16.30 | 17.32 | 17.02 | 18.06 | 18.96 |
| | 4H | 17.39 | 18.35 | 18.13 | 19.10 | 20.01 | 16.89 | 17.86 | 17.63 | 18.61 | 19.52 |
| | 6H | 17.80 | 18.69 | 18.55 | 19.45 | 20.37 | 17.30 | 18.19 | 18.05 | 18.95 | 19.87 |
| | 8H | 17.91 | 18.76 | 18.67 | 19.54 | 20.46 | 17.41 | 18.26 | 18.17 | 19.03 | 19.96 |
| | 12H | 17.96 | 18.78 | 18.73 | 19.55 | 20.50 | 17.45 | 18.27 | 18.22 | 19.04 | 19.99 |
| 4H | 2H | 15.60 | 16.57 | 16.35 | 17.32 | 18.23 | 15.25 | 16.22 | 15.99 | 16.96 | 17.87 |
| | 3H | 17.49 | 18.30 | 18.24 | 19.08 | 20.00 | 17.08 | 17.89 | 17.84 | 18.67 | 19.60 |
| | 4H | 18.21 | 18.94 | 18.98 | 19.73 | 20.68 | 17.79 | 18.52 | 18.56 | 19.31 | 20.26 |
| | 6H | 18.74 | 19.37 | 19.52 | 20.18 | 21.14 | 18.30 | 18.94 | 19.09 | 19.75 | 20.71 |
| | 8H | 18.89 | 19.49 | 19.68 | 20.29 | 21.26 | 18.45 | 19.05 | 19.25 | 19.85 | 20.83 |
| | 12H | 18.97 | 19.51 | 19.79 | 20.34 | 21.32 | 18.53 | 19.06 | 19.34 | 19.89 | 20.87 |
| 8H | 4H | 18.42 | 19.02 | 19.22 | 19.83 | 20.80 | 18.05 | 18.64 | 18.84 | 19.45 | 20.42 |
| | 6H | 19.06 | 19.56 | 19.88 | 20.40 | 21.38 | 18.68 | 19.17 | 19.50 | 20.02 | 20.99 |
| | 8H | 19.28 | 19.72 | 20.11 | 20.57 | 21.56 | 18.89 | 19.33 | 19.72 | 20.17 | 21.16 |
| | 12H | 19.42 | 19.81 | 20.26 | 20.64 | 21.69 | 19.01 | 19.40 | 19.85 | 20.23 | 21.28 |
| 12H | 4H | 18.42 | 18.96 | 19.24 | 19.79 | 20.76 | 18.05 | 18.59 | 18.87 | 19.42 | 20.40 |
| | 6H | 19.09 | 19.53 | 19.93 | 20.38 | 21.37 | 18.72 | 19.16 | 19.55 | 20.00 | 20.99 |
| | 8H | 19.34 | 19.73 | 20.18 | 20.57 | 21.61 | 18.96 | 19.35 | 19.80 | 20.18 | 21.23 |