

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: P911791

Luminaire Tested: DFN2DIP-SQ2F0-080D070US850-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P911791
REPORT IS A COMBINATION OF REPORTS P901350 AND P898215
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ2F0-080D070US850-RLLONL
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

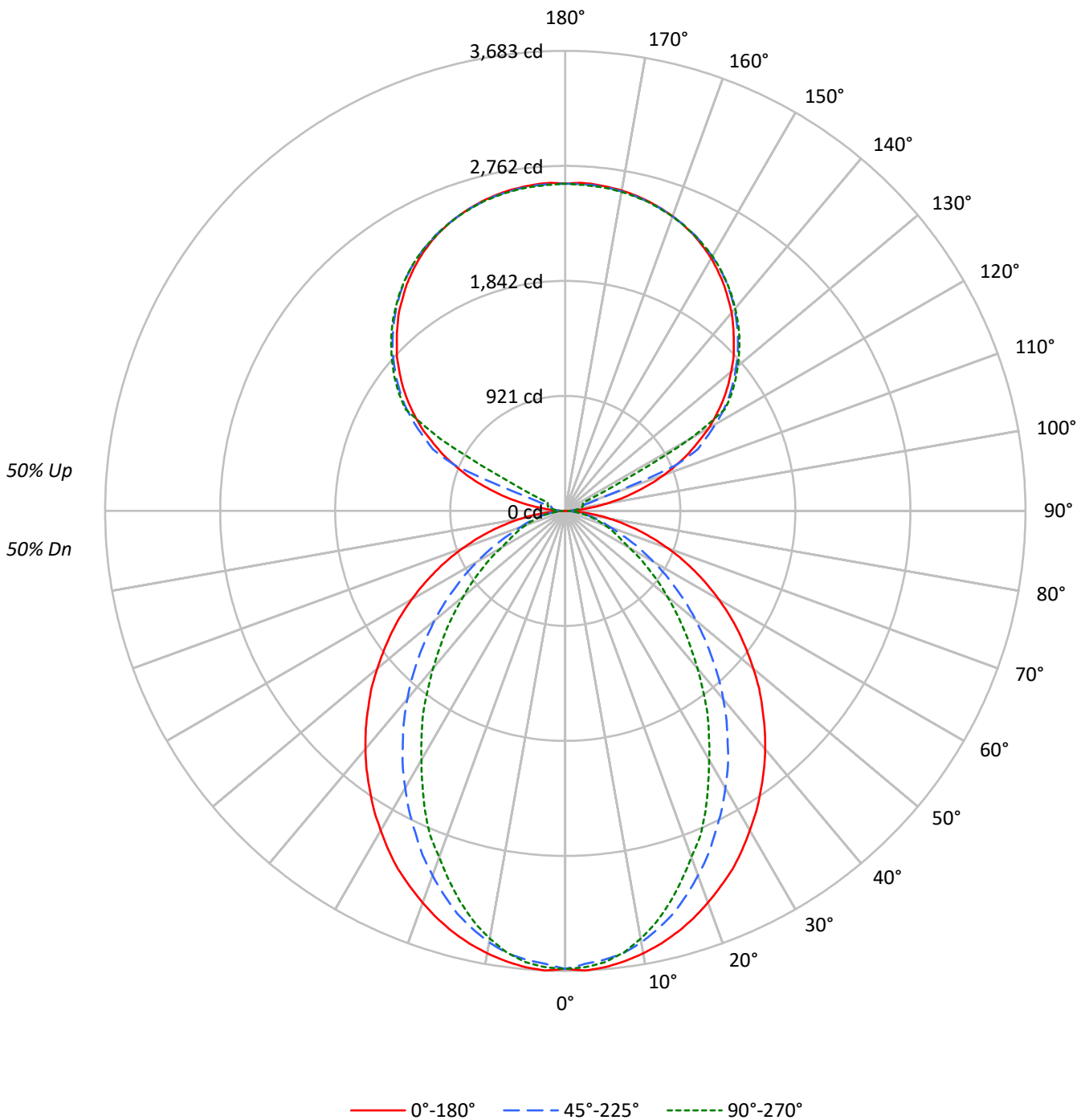
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15226.6 lumens
Efficiency: N/A
Efficacy: 114.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 133.4
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





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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 | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 | 56 | 56 | 56 | 50 |
| 1 | 98 | 94 | 90 | 87 | 90 | 87 | 84 | 81 | 74 | 71 | 69 | 61 | 60 | 58 | 50 | 49 | 48 | 50 | 49 | 48 | 43 |
| 2 | 90 | 83 | 77 | 72 | 83 | 77 | 71 | 67 | 65 | 61 | 58 | 54 | 52 | 49 | 45 | 43 | 41 | 45 | 43 | 41 | 37 |
| 3 | 82 | 73 | 66 | 60 | 76 | 68 | 62 | 57 | 58 | 53 | 49 | 49 | 45 | 42 | 40 | 38 | 36 | 40 | 38 | 36 | 32 |
| 4 | 75 | 65 | 57 | 52 | 69 | 60 | 54 | 48 | 52 | 47 | 42 | 44 | 40 | 37 | 36 | 33 | 31 | 36 | 33 | 31 | 27 |
| 5 | 69 | 58 | 50 | 44 | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 33 | 30 | 27 | 33 | 30 | 27 | 24 |
| 6 | 64 | 52 | 44 | 39 | 59 | 49 | 42 | 37 | 42 | 37 | 32 | 36 | 32 | 28 | 30 | 27 | 24 | 30 | 27 | 24 | 21 |
| 7 | 59 | 47 | 40 | 34 | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 33 | 28 | 25 | 27 | 24 | 22 | 27 | 24 | 22 | 19 |
| 8 | 55 | 43 | 36 | 30 | 51 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 20 | 25 | 22 | 20 | 17 |
| 9 | 51 | 39 | 32 | 27 | 48 | 37 | 30 | 26 | 32 | 27 | 23 | 28 | 23 | 21 | 23 | 20 | 18 | 23 | 20 | 18 | 16 |
| 10 | 48 | 36 | 29 | 25 | 45 | 34 | 28 | 23 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 | 22 | 19 | 16 | 14 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 8063 | 8063 | 8063 |
| 5° | 8062 | 7917 | 7974 |
| 10° | 7968 | 7745 | 7704 |
| 15° | 7844 | 7472 | 7292 |
| 20° | 7685 | 7103 | 6791 |
| 25° | 7522 | 6692 | 6308 |
| 30° | 7308 | 6273 | 5698 |
| 35° | 7098 | 5824 | 5163 |
| 40° | 6883 | 5361 | 4552 |
| 45° | 6635 | 4850 | 3998 |
| 50° | 6377 | 4336 | 3458 |
| 55° | 6106 | 3788 | 2940 |
| 60° | 5792 | 3219 | 2410 |
| 65° | 5431 | 2642 | 2156 |
| 70° | 4991 | 2104 | 1935 |
| 75° | 4438 | 1821 | 1738 |
| 80° | 3644 | 1479 | 1473 |
| 85° | 2372 | 918 | 1048 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 6635 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 343.7 | 2.3 |
| 10°-20° | 943.4 | 6.2 |
| 20°-30° | 1324.5 | 8.7 |
| 30°-40° | 1443.8 | 9.5 |
| 40°-50° | 1327.0 | 8.7 |
| 50°-60° | 1042.1 | 6.8 |
| 60°-70° | 678.3 | 4.5 |
| 70°-80° | 349.2 | 2.3 |
| 80°-90° | 93.8 | 0.6 |
| 90°-100° | 86.4 | 0.6 |
| 100°-110° | 322.1 | 2.1 |
| 110°-120° | 854.1 | 5.6 |
| 120°-130° | 1416.6 | 9.3 |
| 130°-140° | 1504.8 | 9.9 |
| 140°-150° | 1398.5 | 9.2 |
| 150°-160° | 1124.4 | 7.4 |
| 160°-170° | 724.5 | 4.8 |
| 170°-180° | 249.4 | 1.6 |
| 0°-30° | 2611.6 | 17.2 |
| 0°-40° | 4055.4 | 26.6 |
| 0°-60° | 6424.5 | 42.2 |
| 0°-90° | 7545.8 | 49.6 |
| 90°-120° | 1262.6 | 8.3 |
| 90°-150° | 5582.5 | 36.7 |
| 90°-180° | 7681.0 | 50.4 |
| 0°-180° | 15226.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3667 | 3667 | 3667 | 3667 | 3667 | |
| 5° | 3667 | 3650 | 3607 | 3637 | 3627 | 348 |
| 15° | 3488 | 3451 | 3338 | 3275 | 3242 | 983 |
| 25° | 3166 | 3060 | 2840 | 2705 | 2655 | 1456 |
| 35° | 2728 | 2558 | 2267 | 2058 | 1984 | 1707 |
| 45° | 2230 | 2008 | 1659 | 1423 | 1344 | 1722 |
| 55° | 1696 | 1437 | 1078 | 879 | 816 | 1515 |
| 65° | 1145 | 876 | 577 | 465 | 454 | 1135 |
| 75° | 610 | 378 | 266 | 242 | 239 | 646 |
| 85° | 143 | 73 | 63 | 63 | 63 | 164 |
| 90° | 2 | 23 | 38 | 48 | 51 | 14 |
| 95° | 123 | 61 | 74 | 84 | 82 | 146 |
| 105° | 576 | 633 | 116 | 136 | 144 | 616 |
| 115° | 1090 | 1122 | 1170 | 292 | 156 | 1073 |
| 125° | 1541 | 1566 | 1602 | 1615 | 1621 | 1375 |
| 135° | 1907 | 1938 | 1954 | 1974 | 1970 | 1473 |
| 145° | 2212 | 2210 | 2243 | 2256 | 2246 | 1384 |
| 155° | 2436 | 2419 | 2442 | 2453 | 2438 | 1123 |
| 165° | 2567 | 2556 | 2561 | 2574 | 2561 | 725 |
| 175° | 2626 | 2612 | 2616 | 2629 | 2610 | 250 |
| 180° | 2620 | 2620 | 2620 | 2620 | 2620 | |



TEST NUMBER: P911791

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3666.8 | 3666.8 | 3666.8 | 3666.8 | 3666.8 |
| 2.5° | 3683.3 | 3666.8 | 3630.2 | 3663.6 | 3656.9 |
| 5° | 3666.8 | 3650.3 | 3606.9 | 3636.9 | 3627.0 |
| 7.5° | 3636.9 | 3617.1 | 3570.6 | 3583.7 | 3567.1 |
| 10° | 3597.0 | 3573.9 | 3507.7 | 3497.5 | 3477.7 |
| 12.5° | 3547.5 | 3517.5 | 3427.7 | 3408.0 | 3371.4 |
| 15° | 3487.6 | 3451.0 | 3338.3 | 3275.3 | 3242.2 |
| 17.5° | 3417.8 | 3364.7 | 3225.3 | 3152.4 | 3099.2 |
| 20° | 3338.3 | 3271.8 | 3106.0 | 3023.2 | 2949.9 |
| 22.5° | 3252.0 | 3175.6 | 2983.1 | 2870.4 | 2820.7 |
| 25° | 3165.8 | 3059.5 | 2840.5 | 2704.6 | 2654.6 |
| 27.5° | 3062.9 | 2949.9 | 2707.7 | 2551.8 | 2475.4 |
| 30° | 2953.5 | 2827.1 | 2561.7 | 2392.7 | 2302.8 |
| 32.5° | 2847.1 | 2694.4 | 2422.6 | 2223.3 | 2140.3 |
| 35° | 2727.8 | 2558.5 | 2266.6 | 2057.5 | 1984.2 |
| 37.5° | 2611.6 | 2428.9 | 2120.5 | 1891.3 | 1808.6 |
| 40° | 2488.8 | 2289.9 | 1967.7 | 1732.1 | 1645.9 |
| 42.5° | 2362.7 | 2150.5 | 1815.2 | 1569.6 | 1486.7 |
| 45° | 2230.0 | 2007.5 | 1659.3 | 1423.4 | 1343.9 |
| 47.5° | 2104.0 | 1868.4 | 1510.0 | 1274.1 | 1201.3 |
| 50° | 1964.5 | 1729.0 | 1364.0 | 1134.7 | 1065.3 |
| 52.5° | 1828.3 | 1579.3 | 1224.4 | 1005.5 | 942.5 |
| 55° | 1695.6 | 1436.8 | 1078.4 | 879.4 | 816.4 |
| 57.5° | 1559.7 | 1294.2 | 949.2 | 763.3 | 710.1 |
| 60° | 1420.2 | 1154.8 | 812.9 | 643.9 | 590.8 |
| 62.5° | 1284.3 | 1018.8 | 696.8 | 537.6 | 511.2 |
| 65° | 1144.9 | 875.9 | 577.3 | 464.8 | 454.5 |
| 67.5° | 1012.2 | 743.3 | 464.8 | 408.0 | 398.2 |
| 70° | 872.8 | 614.1 | 384.8 | 351.7 | 338.4 |
| 72.5° | 740.0 | 494.3 | 321.8 | 295.4 | 288.7 |
| 75° | 610.5 | 378.2 | 265.5 | 242.2 | 239.1 |
| 77.5° | 481.3 | 268.6 | 209.2 | 195.7 | 189.1 |
| 80° | 361.5 | 192.6 | 159.1 | 146.1 | 146.1 |
| 82.5° | 252.1 | 129.5 | 109.5 | 102.8 | 102.8 |
| 85° | 142.6 | 72.9 | 63.0 | 63.0 | 63.0 |
| 87.5° | 53.1 | 26.4 | 26.4 | 23.3 | 23.3 |
| 90° | 1.8 | 22.7 | 37.8 | 47.5 | 51.1 |
| 92.5° | 47.5 | 39.8 | 45.5 | 49.4 | 51.1 |
| 95° | 123.1 | 60.6 | 73.9 | 83.5 | 81.5 |
| 97.5° | 221.7 | 66.4 | 96.6 | 102.5 | 104.2 |
| 100° | 335.7 | 75.9 | 108.0 | 123.1 | 127.0 |
| 102.5° | 460.6 | 457.0 | 111.9 | 132.6 | 138.4 |
| 105° | 576.3 | 633.2 | 115.7 | 136.4 | 144.1 |
| 107.5° | 710.9 | 758.2 | 119.6 | 140.3 | 147.9 |
| 110° | 840.0 | 879.5 | 331.8 | 142.3 | 149.7 |



TEST NUMBER: P911791

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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 961.3 | 995.2 | 963.1 | 145.8 | 151.7 |
| 115° | 1090.0 | 1122.2 | 1169.7 | 292.0 | 155.6 |
| 117.5° | 1201.9 | 1239.8 | 1272.1 | 1000.9 | 504.3 |
| 120° | 1327.0 | 1355.4 | 1389.7 | 1412.4 | 1156.5 |
| 122.5° | 1433.0 | 1463.4 | 1501.6 | 1512.8 | 1514.8 |
| 125° | 1541.2 | 1565.9 | 1602.0 | 1615.3 | 1620.8 |
| 127.5° | 1639.8 | 1666.3 | 1694.9 | 1713.8 | 1715.6 |
| 130° | 1732.7 | 1763.1 | 1783.8 | 1804.8 | 1803.0 |
| 132.5° | 1827.5 | 1852.3 | 1873.0 | 1890.1 | 1888.3 |
| 135° | 1907.1 | 1937.5 | 1954.5 | 1973.6 | 1969.8 |
| 137.5° | 1990.4 | 2013.3 | 2032.4 | 2051.3 | 2045.7 |
| 140° | 2071.9 | 2087.2 | 2108.0 | 2125.1 | 2115.6 |
| 142.5° | 2140.4 | 2153.7 | 2178.2 | 2193.3 | 2183.8 |
| 145° | 2212.5 | 2210.5 | 2242.6 | 2255.9 | 2246.5 |
| 147.5° | 2274.8 | 2269.2 | 2301.4 | 2310.8 | 2303.4 |
| 150° | 2335.6 | 2322.4 | 2352.7 | 2363.9 | 2354.5 |
| 152.5° | 2386.7 | 2371.6 | 2400.0 | 2411.4 | 2398.2 |
| 155° | 2436.0 | 2419.1 | 2441.8 | 2453.1 | 2438.0 |
| 157.5° | 2475.8 | 2460.8 | 2477.8 | 2491.1 | 2475.8 |
| 160° | 2510.1 | 2498.6 | 2510.1 | 2521.3 | 2508.0 |
| 162.5° | 2540.3 | 2529.0 | 2538.4 | 2551.7 | 2534.6 |
| 165° | 2566.8 | 2555.6 | 2561.1 | 2574.4 | 2561.1 |
| 167.5° | 2587.7 | 2576.2 | 2582.1 | 2595.4 | 2578.3 |
| 170° | 2604.8 | 2593.4 | 2597.2 | 2610.5 | 2593.4 |
| 172.5° | 2616.1 | 2604.8 | 2608.7 | 2621.9 | 2604.8 |
| 175° | 2625.6 | 2612.2 | 2616.1 | 2629.3 | 2610.5 |
| 177.5° | 2629.3 | 2616.1 | 2618.1 | 2631.4 | 2614.2 |
| 180° | 2619.9 | 2619.9 | 2619.9 | 2619.9 | 2619.9 |



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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 | 14.24 | 15.07 | 15.21 | 16.05 | 17.33 | 10.20 | 11.03 | 11.17 | 12.01 | 13.29 |
| | 3H | 15.90 | 16.64 | 16.88 | 17.63 | 18.93 | 11.37 | 12.11 | 12.35 | 13.10 | 14.40 |
| | 4H | 16.50 | 17.19 | 17.49 | 18.18 | 19.50 | 11.81 | 12.51 | 12.80 | 13.50 | 14.81 |
| | 6H | 16.90 | 17.54 | 17.90 | 18.54 | 19.86 | 12.12 | 12.76 | 13.12 | 13.75 | 15.08 |
| | 8H | 17.02 | 17.63 | 18.03 | 18.64 | 19.96 | 12.20 | 12.81 | 13.21 | 13.82 | 15.14 |
| | 12H | 17.07 | 17.65 | 18.09 | 18.66 | 20.00 | 12.23 | 12.81 | 13.25 | 13.82 | 15.16 |
| 4H | 2H | 14.26 | 14.95 | 15.25 | 15.94 | 17.26 | 10.79 | 11.49 | 11.79 | 12.48 | 13.79 |
| | 3H | 16.06 | 16.64 | 17.07 | 17.66 | 18.99 | 12.12 | 12.70 | 13.12 | 13.72 | 15.04 |
| | 4H | 16.74 | 17.27 | 17.75 | 18.28 | 19.63 | 12.65 | 13.18 | 13.66 | 14.19 | 15.54 |
| | 6H | 17.23 | 17.69 | 18.26 | 18.73 | 20.07 | 13.05 | 13.50 | 14.07 | 14.54 | 15.88 |
| | 8H | 17.40 | 17.82 | 18.43 | 18.85 | 20.21 | 13.17 | 13.59 | 14.19 | 14.62 | 15.98 |
| | 12H | 17.48 | 17.87 | 18.53 | 18.91 | 20.27 | 13.22 | 13.60 | 14.27 | 14.65 | 16.01 |
| 8H | 4H | 16.70 | 17.13 | 17.73 | 18.16 | 19.51 | 12.92 | 13.34 | 13.94 | 14.37 | 15.73 |
| | 6H | 17.25 | 17.60 | 18.30 | 18.67 | 20.02 | 13.41 | 13.76 | 14.46 | 14.83 | 16.19 |
| | 8H | 17.45 | 17.76 | 18.51 | 18.81 | 20.19 | 13.59 | 13.90 | 14.65 | 14.95 | 16.33 |
| | 12H | 17.57 | 17.85 | 18.64 | 18.90 | 20.31 | 13.69 | 13.96 | 14.75 | 15.01 | 16.43 |
| 12H | 4H | 16.65 | 17.04 | 17.70 | 18.08 | 19.44 | 12.92 | 13.30 | 13.96 | 14.35 | 15.71 |
| | 6H | 17.22 | 17.53 | 18.28 | 18.58 | 19.96 | 13.45 | 13.76 | 14.51 | 14.82 | 16.19 |
| | 8H | 17.43 | 17.70 | 18.49 | 18.75 | 20.17 | 13.65 | 13.92 | 14.71 | 14.97 | 16.39 |