

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: P911908

Luminaire Tested: DFN2DIP-SQ3F0-070D050US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P911908
REPORT IS A COMBINATION OF REPORTS P899885 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-070D050US850-FLLFLL
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

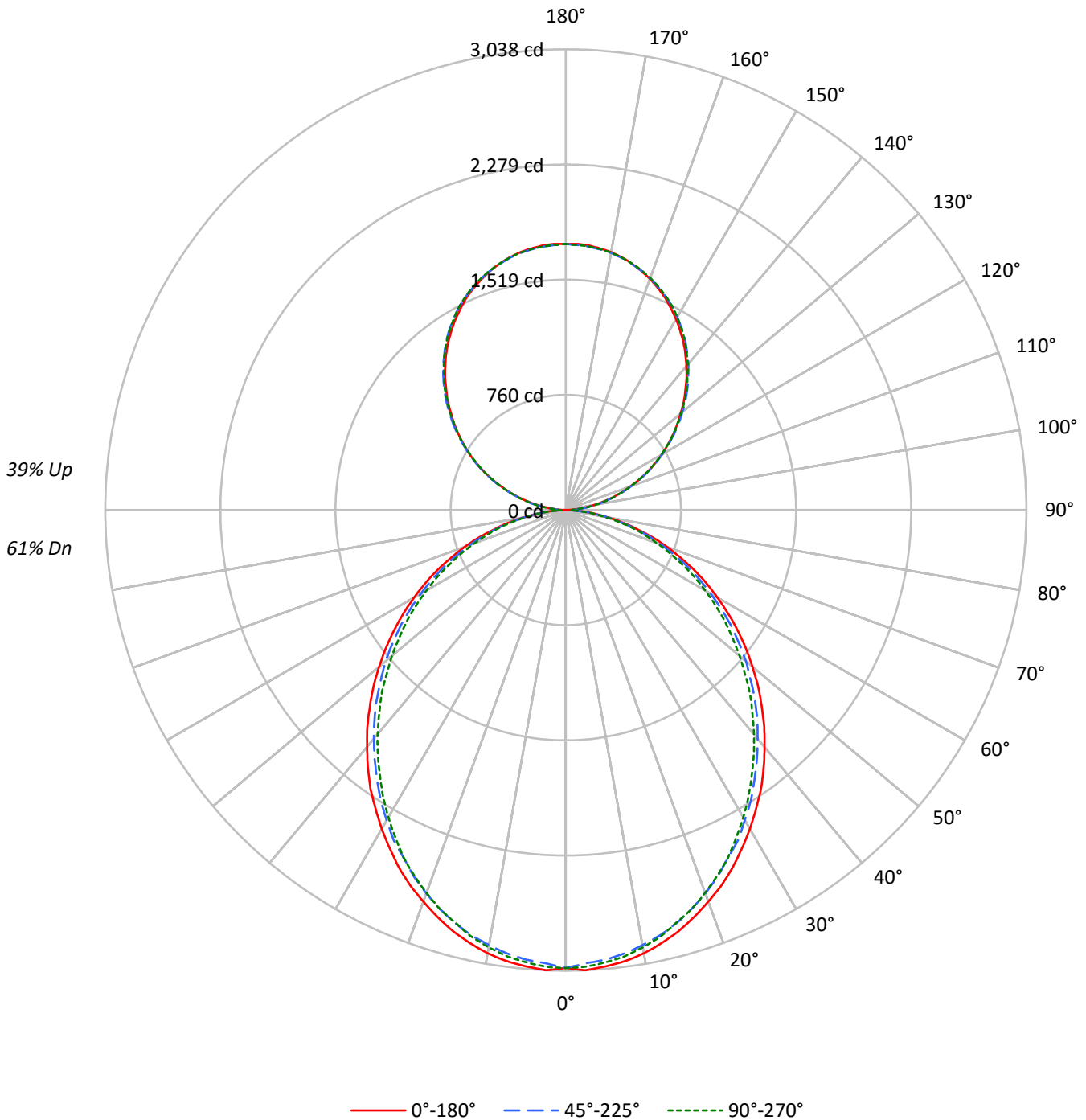
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12592.7 lumens
Efficiency: N/A
Efficacy: 122.9 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): 102.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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: P911908

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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 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 89 | 89 | 89 | 77 | 77 | 77 | 66 | 66 | 66 | 66 | 66 | 61 |
| 1 | 100 | 96 | 92 | 88 | 94 | 90 | 86 | 83 | 79 | 76 | 74 | 68 | 66 | 65 | 59 | 57 | 56 | 56 | 56 | 51 |
| 2 | 91 | 84 | 77 | 72 | 85 | 79 | 73 | 68 | 69 | 65 | 61 | 60 | 57 | 54 | 52 | 49 | 47 | 47 | 47 | 43 |
| 3 | 83 | 74 | 66 | 60 | 78 | 69 | 63 | 57 | 61 | 56 | 51 | 53 | 49 | 46 | 46 | 43 | 40 | 40 | 40 | 37 |
| 4 | 76 | 65 | 57 | 51 | 71 | 61 | 54 | 49 | 54 | 48 | 44 | 47 | 43 | 39 | 41 | 37 | 35 | 35 | 35 | 31 |
| 5 | 70 | 58 | 50 | 44 | 65 | 55 | 47 | 42 | 48 | 42 | 38 | 42 | 38 | 34 | 37 | 33 | 30 | 30 | 30 | 27 |
| 6 | 65 | 52 | 44 | 38 | 60 | 49 | 42 | 36 | 44 | 38 | 33 | 38 | 34 | 30 | 33 | 30 | 27 | 27 | 27 | 24 |
| 7 | 60 | 47 | 39 | 33 | 56 | 45 | 37 | 32 | 40 | 34 | 29 | 35 | 30 | 26 | 31 | 27 | 24 | 24 | 24 | 21 |
| 8 | 56 | 43 | 35 | 30 | 52 | 41 | 33 | 28 | 36 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 21 | 21 | 21 | 19 |
| 9 | 52 | 39 | 32 | 27 | 48 | 37 | 30 | 25 | 33 | 27 | 23 | 30 | 25 | 21 | 26 | 22 | 19 | 19 | 19 | 17 |
| 10 | 48 | 36 | 29 | 24 | 45 | 34 | 28 | 23 | 31 | 25 | 21 | 27 | 23 | 19 | 24 | 20 | 17 | 17 | 17 | 16 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3461 | 3461 | 3461 |
| 5° | 3464 | 3411 | 3435 |
| 10° | 3434 | 3362 | 3387 |
| 15° | 3381 | 3305 | 3313 |
| 20° | 3311 | 3225 | 3238 |
| 25° | 3241 | 3131 | 3151 |
| 30° | 3154 | 3043 | 3040 |
| 35° | 3071 | 2940 | 2923 |
| 40° | 2969 | 2835 | 2812 |
| 45° | 2867 | 2731 | 2698 |
| 50° | 2756 | 2620 | 2567 |
| 55° | 2639 | 2493 | 2445 |
| 60° | 2507 | 2342 | 2306 |
| 65° | 2363 | 2186 | 2142 |
| 70° | 2179 | 1994 | 1965 |
| 75° | 1925 | 1765 | 1800 |
| 80° | 1618 | 1473 | 1488 |
| 85° | 1140 | 977 | 974 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2867 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 284.3 | 2.3 |
| 10°-20° | 799.9 | 6.4 |
| 20°-30° | 1175.6 | 9.3 |
| 30°-40° | 1365.3 | 10.8 |
| 40°-50° | 1363.6 | 10.8 |
| 50°-60° | 1189.1 | 9.4 |
| 60°-70° | 879.0 | 7.0 |
| 70°-80° | 497.3 | 3.9 |
| 80°-90° | 136.3 | 1.1 |
| 90°-100° | 108.5 | 0.9 |
| 100°-110° | 344.8 | 2.7 |
| 110°-120° | 590.1 | 4.7 |
| 120°-130° | 776.0 | 6.2 |
| 130°-140° | 871.0 | 6.9 |
| 140°-150° | 854.2 | 6.8 |
| 150°-160° | 716.5 | 5.7 |
| 160°-170° | 475.2 | 3.8 |
| 170°-180° | 166.1 | 1.3 |
| 0°-30° | 2259.8 | 17.9 |
| 0°-40° | 3625.1 | 28.8 |
| 0°-60° | 6177.8 | 49.1 |
| 0°-90° | 7690.4 | 61.1 |
| 90°-120° | 1043.4 | 8.3 |
| 90°-150° | 3544.6 | 28.1 |
| 90°-180° | 4902.0 | 38.9 |
| 0°-180° | 12592.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3021 | 3021 | 3021 | 3021 | 3021 | |
| 5° | 3021 | 3009 | 2977 | 3000 | 2995 | 287 |
| 15° | 2876 | 2858 | 2820 | 2832 | 2818 | 810 |
| 25° | 2602 | 2579 | 2530 | 2536 | 2530 | 1198 |
| 35° | 2245 | 2216 | 2170 | 2152 | 2138 | 1402 |
| 45° | 1827 | 1807 | 1763 | 1731 | 1720 | 1410 |
| 55° | 1383 | 1365 | 1330 | 1296 | 1281 | 1236 |
| 65° | 933 | 915 | 886 | 860 | 845 | 922 |
| 75° | 488 | 482 | 467 | 450 | 456 | 521 |
| 85° | 119 | 116 | 114 | 104 | 102 | 133 |
| 90° | 2 | 19 | 52 | 49 | 50 | 12 |
| 95° | 77 | 92 | 95 | 95 | 92 | 86 |
| 105° | 318 | 322 | 326 | 328 | 328 | 336 |
| 115° | 592 | 601 | 598 | 596 | 592 | 586 |
| 125° | 861 | 874 | 870 | 866 | 864 | 770 |
| 135° | 1114 | 1130 | 1134 | 1132 | 1128 | 861 |
| 145° | 1352 | 1363 | 1371 | 1373 | 1367 | 845 |
| 155° | 1546 | 1551 | 1555 | 1563 | 1558 | 712 |
| 165° | 1682 | 1681 | 1681 | 1691 | 1684 | 475 |
| 175° | 1751 | 1746 | 1743 | 1754 | 1745 | 166 |
| 180° | 1754 | 1754 | 1754 | 1754 | 1754 | |



TEST NUMBER: P911908

CATALOG NUMBER: DFN2DIP-SQ3F0-070D050US850-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3020.6 | 3020.6 | 3020.6 | 3020.6 | 3020.6 |
| 2.5° | 3038.2 | 3023.7 | 2991.6 | 3020.6 | 3015.0 |
| 5° | 3020.6 | 3009.3 | 2977.2 | 3000.3 | 2994.7 |
| 7.5° | 3000.3 | 2983.0 | 2950.9 | 2974.4 | 2968.6 |
| 10° | 2968.6 | 2948.2 | 2913.3 | 2936.5 | 2927.9 |
| 12.5° | 2924.8 | 2907.6 | 2872.8 | 2887.2 | 2881.3 |
| 15° | 2875.5 | 2858.2 | 2820.3 | 2832.1 | 2817.5 |
| 17.5° | 2814.4 | 2797.2 | 2759.3 | 2773.8 | 2759.3 |
| 20° | 2747.5 | 2730.4 | 2689.7 | 2698.3 | 2686.9 |
| 22.5° | 2681.0 | 2654.8 | 2616.9 | 2616.9 | 2611.0 |
| 25° | 2602.5 | 2579.3 | 2530.1 | 2535.6 | 2530.1 |
| 27.5° | 2515.2 | 2494.9 | 2457.3 | 2448.7 | 2434.1 |
| 30° | 2428.4 | 2404.9 | 2361.5 | 2352.9 | 2341.1 |
| 32.5° | 2335.2 | 2318.0 | 2271.5 | 2253.9 | 2242.2 |
| 35° | 2245.3 | 2216.3 | 2169.8 | 2152.2 | 2137.7 |
| 37.5° | 2143.6 | 2117.4 | 2070.8 | 2050.5 | 2036.0 |
| 40° | 2039.1 | 2015.7 | 1969.1 | 1943.3 | 1931.5 |
| 42.5° | 1937.4 | 1914.0 | 1867.8 | 1838.5 | 1821.2 |
| 45° | 1827.1 | 1806.8 | 1763.0 | 1731.3 | 1719.5 |
| 47.5° | 1719.5 | 1699.2 | 1652.6 | 1620.6 | 1603.4 |
| 50° | 1606.2 | 1591.6 | 1550.9 | 1510.3 | 1495.8 |
| 52.5° | 1495.8 | 1475.5 | 1437.9 | 1405.9 | 1385.5 |
| 55° | 1382.7 | 1365.2 | 1330.4 | 1295.5 | 1281.0 |
| 57.5° | 1269.4 | 1254.8 | 1216.9 | 1182.1 | 1170.4 |
| 60° | 1155.9 | 1144.5 | 1103.9 | 1071.8 | 1063.2 |
| 62.5° | 1045.6 | 1025.3 | 996.3 | 967.4 | 955.6 |
| 65° | 932.6 | 914.9 | 886.0 | 859.8 | 845.3 |
| 67.5° | 816.3 | 801.6 | 775.6 | 755.3 | 743.6 |
| 70° | 708.8 | 697.1 | 670.8 | 650.5 | 639.1 |
| 72.5° | 598.4 | 586.8 | 572.2 | 551.9 | 543.3 |
| 75° | 487.8 | 482.3 | 467.4 | 450.3 | 456.1 |
| 77.5° | 389.3 | 377.5 | 371.6 | 363.0 | 354.4 |
| 80° | 290.6 | 287.6 | 281.7 | 273.0 | 267.2 |
| 82.5° | 197.5 | 197.5 | 194.7 | 183.1 | 183.1 |
| 85° | 119.0 | 116.2 | 113.5 | 104.5 | 101.7 |
| 87.5° | 52.3 | 46.6 | 40.7 | 32.1 | 28.9 |
| 90° | 1.6 | 19.1 | 51.8 | 48.7 | 50.2 |
| 92.5° | 32.8 | 44.4 | 46.0 | 47.6 | 47.6 |
| 95° | 77.2 | 92.0 | 94.6 | 94.6 | 92.0 |
| 97.5° | 128.4 | 142.2 | 148.1 | 148.1 | 148.1 |
| 100° | 187.6 | 199.8 | 204.1 | 204.1 | 202.5 |
| 102.5° | 250.1 | 259.1 | 264.8 | 266.5 | 264.8 |
| 105° | 318.3 | 322.5 | 325.7 | 328.3 | 328.3 |
| 107.5° | 385.9 | 392.3 | 392.3 | 393.4 | 385.9 |
| 110° | 451.5 | 460.0 | 460.0 | 460.0 | 455.7 |



TEST NUMBER: P911908

CATALOG NUMBER: DFN2DIP-SQ3F0-070D050US850-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 522.3 | 531.3 | 529.8 | 525.6 | 522.3 |
| 115° | 592.1 | 600.6 | 598.0 | 596.4 | 592.1 |
| 117.5° | 661.4 | 673.1 | 665.6 | 661.4 | 657.2 |
| 120° | 731.2 | 742.8 | 731.2 | 731.2 | 726.4 |
| 122.5° | 794.6 | 809.5 | 802.0 | 797.8 | 794.6 |
| 125° | 861.2 | 874.4 | 870.2 | 865.5 | 863.9 |
| 127.5° | 926.2 | 942.6 | 936.9 | 930.5 | 926.2 |
| 130° | 987.1 | 1006.1 | 1003.4 | 1000.3 | 994.4 |
| 132.5° | 1055.3 | 1070.1 | 1071.2 | 1063.8 | 1059.5 |
| 135° | 1114.0 | 1130.3 | 1133.5 | 1132.0 | 1127.7 |
| 137.5° | 1179.5 | 1192.7 | 1195.4 | 1194.3 | 1188.0 |
| 140° | 1237.1 | 1250.4 | 1257.7 | 1257.7 | 1252.0 |
| 142.5° | 1296.3 | 1309.6 | 1313.8 | 1315.4 | 1309.6 |
| 145° | 1352.4 | 1363.0 | 1371.4 | 1373.1 | 1367.2 |
| 147.5° | 1402.7 | 1415.9 | 1422.2 | 1424.8 | 1419.0 |
| 150° | 1454.5 | 1463.4 | 1469.2 | 1474.0 | 1469.2 |
| 152.5° | 1500.5 | 1509.5 | 1516.8 | 1522.7 | 1516.8 |
| 155° | 1546.4 | 1550.6 | 1555.4 | 1562.8 | 1558.0 |
| 157.5° | 1586.1 | 1589.2 | 1591.9 | 1602.5 | 1595.1 |
| 160° | 1621.5 | 1624.7 | 1626.2 | 1635.2 | 1628.9 |
| 162.5° | 1654.3 | 1654.3 | 1655.8 | 1665.9 | 1658.5 |
| 165° | 1682.4 | 1680.7 | 1680.7 | 1691.3 | 1683.9 |
| 167.5° | 1707.6 | 1702.9 | 1702.9 | 1713.5 | 1706.1 |
| 170° | 1726.7 | 1722.5 | 1720.9 | 1731.5 | 1722.5 |
| 172.5° | 1739.9 | 1735.7 | 1734.1 | 1744.7 | 1735.7 |
| 175° | 1750.6 | 1746.2 | 1743.1 | 1753.7 | 1744.7 |
| 177.5° | 1756.3 | 1752.1 | 1748.9 | 1757.9 | 1748.9 |
| 180° | 1753.7 | 1753.7 | 1753.7 | 1753.7 | 1753.7 |



TEST NUMBER: P911908
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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 | 12.51 | 13.48 | 13.37 | 14.36 | 15.47 | 12.07 | 13.04 | 12.92 | 13.92 | 15.02 |
| | 3H | 14.18 | 15.05 | 15.05 | 15.94 | 17.07 | 13.69 | 14.56 | 14.56 | 15.45 | 16.58 |
| | 4H | 14.77 | 15.59 | 15.65 | 16.48 | 17.62 | 14.27 | 15.10 | 15.16 | 15.99 | 17.13 |
| | 6H | 15.17 | 15.93 | 16.07 | 16.83 | 17.98 | 14.67 | 15.43 | 15.57 | 16.33 | 17.48 |
| | 8H | 15.28 | 16.00 | 16.18 | 16.92 | 18.07 | 14.77 | 15.50 | 15.68 | 16.41 | 17.57 |
| | 12H | 15.33 | 16.01 | 16.24 | 16.93 | 18.10 | 14.82 | 15.51 | 15.73 | 16.42 | 17.60 |
| 4H | 2H | 12.98 | 13.81 | 13.87 | 14.70 | 15.84 | 12.63 | 13.45 | 13.52 | 14.35 | 15.49 |
| | 3H | 14.85 | 15.54 | 15.75 | 16.47 | 17.62 | 14.45 | 15.13 | 15.35 | 16.06 | 17.21 |
| | 4H | 15.57 | 16.20 | 16.48 | 17.12 | 18.30 | 15.15 | 15.77 | 16.06 | 16.69 | 17.87 |
| | 6H | 16.09 | 16.63 | 17.01 | 17.57 | 18.75 | 15.65 | 16.20 | 16.58 | 17.14 | 18.32 |
| | 8H | 16.24 | 16.74 | 17.16 | 17.68 | 18.88 | 15.80 | 16.30 | 16.73 | 17.24 | 18.44 |
| | 12H | 16.31 | 16.77 | 17.26 | 17.73 | 18.93 | 15.86 | 16.32 | 16.81 | 17.28 | 18.48 |
| 8H | 4H | 15.77 | 16.28 | 16.70 | 17.22 | 18.41 | 15.39 | 15.90 | 16.32 | 16.84 | 18.03 |
| | 6H | 16.40 | 16.82 | 17.35 | 17.80 | 18.99 | 16.02 | 16.43 | 16.97 | 17.42 | 18.61 |
| | 8H | 16.62 | 16.99 | 17.58 | 17.96 | 19.17 | 16.23 | 16.60 | 17.19 | 17.57 | 18.78 |
| | 12H | 16.75 | 17.08 | 17.72 | 18.04 | 19.30 | 16.34 | 16.67 | 17.31 | 17.63 | 18.89 |
| 12H | 4H | 15.76 | 16.22 | 16.71 | 17.17 | 18.37 | 15.39 | 15.85 | 16.34 | 16.80 | 18.01 |
| | 6H | 16.43 | 16.80 | 17.39 | 17.77 | 18.98 | 16.06 | 16.43 | 17.02 | 17.40 | 18.61 |
| | 8H | 16.67 | 17.00 | 17.64 | 17.96 | 19.22 | 16.29 | 16.62 | 17.26 | 17.58 | 18.84 |