

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: P917375

Luminaire Tested: DFN2DIP-SQ3F0-070D070US930-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917375
REPORT IS A COMBINATION OF REPORTS P901442 AND P898289
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-070D070US930-RLLONL
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

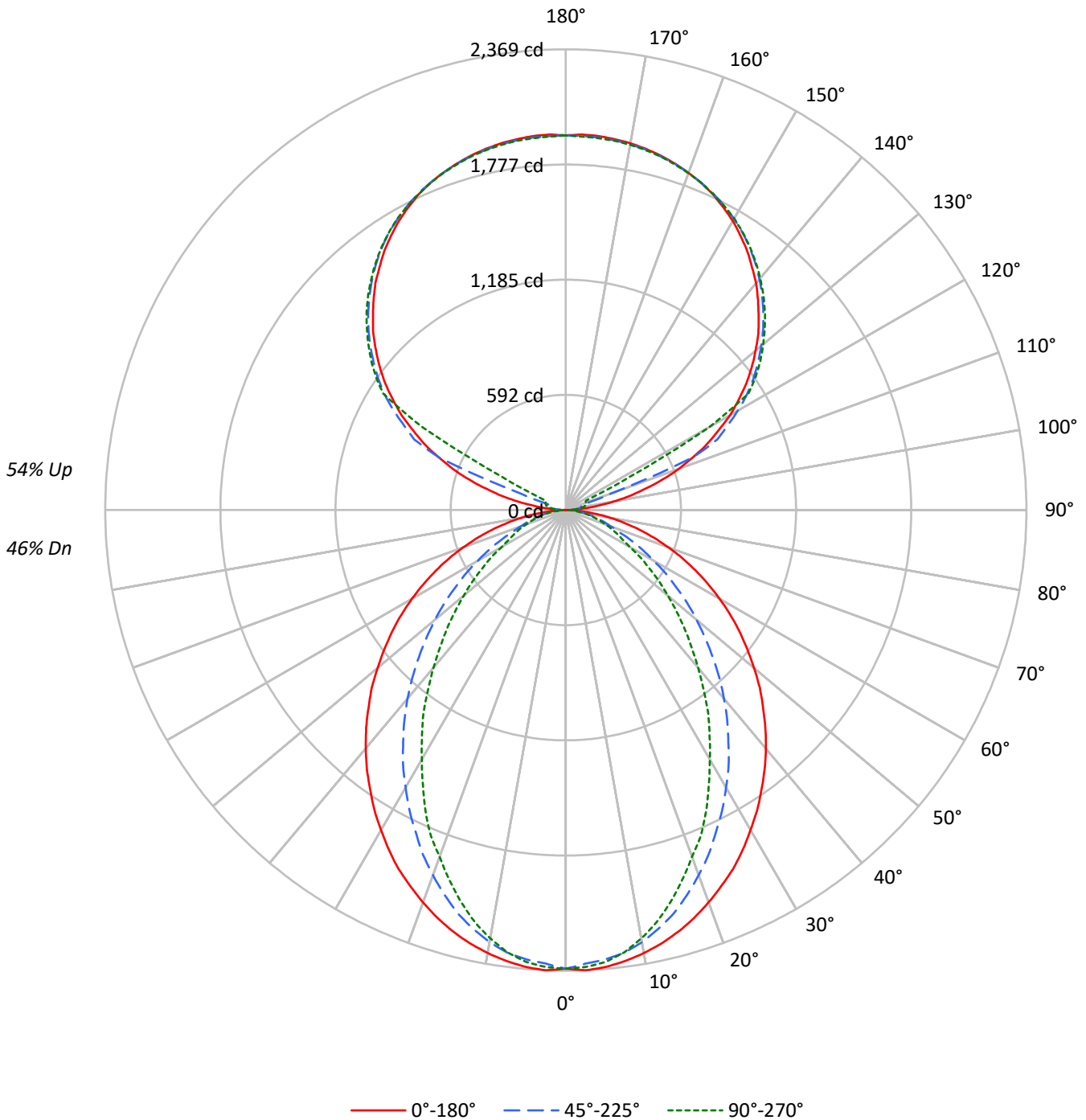
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10501.0 lumens
Efficiency: N/A
Efficacy: 88.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 118.1
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





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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 | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 | 46 | | | 46 |
| 1 | 97 | 93 | 90 | 86 | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 | 40 | | | 40 |
| 2 | 89 | 82 | 76 | 71 | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 | 34 | | | 34 |
| 3 | 81 | 72 | 65 | 60 | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 | 29 | | | 29 |
| 4 | 75 | 64 | 57 | 51 | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 | 26 | | | 26 |
| 5 | 69 | 58 | 50 | 44 | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 | 23 | | | 23 |
| 6 | 63 | 52 | 44 | 38 | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 | 20 | | | 20 |
| 7 | 59 | 47 | 39 | 34 | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 | 18 | | | 18 |
| 8 | 55 | 43 | 35 | 30 | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 | 16 | | | 16 |
| 9 | 51 | 39 | 32 | 27 | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 | 15 | | | 15 |
| 10 | 48 | 36 | 29 | 24 | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 | 13 | | | 13 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2703 | 2703 | 2703 |
| 5° | 2705 | 2658 | 2676 |
| 10° | 2677 | 2604 | 2588 |
| 15° | 2638 | 2516 | 2453 |
| 20° | 2588 | 2396 | 2287 |
| 25° | 2536 | 2261 | 2126 |
| 30° | 2467 | 2124 | 1924 |
| 35° | 2400 | 1976 | 1746 |
| 40° | 2331 | 1823 | 1541 |
| 45° | 2251 | 1653 | 1357 |
| 50° | 2168 | 1482 | 1176 |
| 55° | 2082 | 1300 | 1002 |
| 60° | 1982 | 1110 | 824 |
| 65° | 1866 | 916 | 741 |
| 70° | 1726 | 736 | 669 |
| 75° | 1550 | 645 | 607 |
| 80° | 1295 | 536 | 523 |
| 85° | 878 | 349 | 388 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2251 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 221.1 | 2.1 |
| 10°-20° | 606.9 | 5.8 |
| 20°-30° | 852.0 | 8.1 |
| 30°-40° | 928.8 | 8.8 |
| 40°-50° | 853.6 | 8.1 |
| 50°-60° | 670.4 | 6.4 |
| 60°-70° | 436.4 | 4.2 |
| 70°-80° | 224.6 | 2.1 |
| 80°-90° | 60.7 | 0.6 |
| 90°-100° | 63.5 | 0.6 |
| 100°-110° | 236.8 | 2.3 |
| 110°-120° | 627.9 | 6.0 |
| 120°-130° | 1041.5 | 9.9 |
| 130°-140° | 1106.3 | 10.5 |
| 140°-150° | 1028.1 | 9.8 |
| 150°-160° | 826.6 | 7.9 |
| 160°-170° | 532.6 | 5.1 |
| 170°-180° | 183.3 | 1.7 |
| 0°-30° | 1679.9 | 16.0 |
| 0°-40° | 2608.7 | 24.8 |
| 0°-60° | 4132.7 | 39.4 |
| 0°-90° | 4854.4 | 46.2 |
| 90°-120° | 928.2 | 8.8 |
| 90°-150° | 4104.1 | 39.1 |
| 90°-180° | 5647.0 | 53.8 |
| 0°-180° | 10501.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2359 | 2359 | 2359 | 2359 | 2359 | |
| 5° | 2359 | 2348 | 2320 | 2340 | 2333 | 224 |
| 15° | 2244 | 2220 | 2147 | 2107 | 2086 | 632 |
| 25° | 2036 | 1968 | 1827 | 1740 | 1708 | 937 |
| 35° | 1755 | 1646 | 1458 | 1324 | 1276 | 1098 |
| 45° | 1434 | 1291 | 1067 | 916 | 864 | 1108 |
| 55° | 1091 | 924 | 694 | 566 | 525 | 975 |
| 65° | 736 | 564 | 371 | 299 | 292 | 730 |
| 75° | 393 | 243 | 171 | 156 | 154 | 415 |
| 85° | 92 | 47 | 40 | 40 | 40 | 105 |
| 90° | 1 | 17 | 28 | 35 | 38 | 10 |
| 95° | 90 | 44 | 54 | 61 | 60 | 107 |
| 105° | 424 | 466 | 85 | 100 | 106 | 453 |
| 115° | 801 | 825 | 860 | 215 | 114 | 789 |
| 125° | 1133 | 1151 | 1178 | 1188 | 1192 | 1010 |
| 135° | 1402 | 1424 | 1437 | 1451 | 1448 | 1083 |
| 145° | 1626 | 1625 | 1649 | 1658 | 1652 | 1017 |
| 155° | 1791 | 1778 | 1795 | 1803 | 1792 | 825 |
| 165° | 1887 | 1879 | 1883 | 1893 | 1883 | 533 |
| 175° | 1930 | 1920 | 1923 | 1933 | 1919 | 184 |
| 180° | 1926 | 1926 | 1926 | 1926 | 1926 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2358.7 | 2358.7 | 2358.7 | 2358.7 | 2358.7 |
| 2.5° | 2369.3 | 2358.7 | 2335.2 | 2356.7 | 2352.4 |
| 5° | 2358.7 | 2348.1 | 2320.3 | 2339.5 | 2333.1 |
| 7.5° | 2339.5 | 2326.8 | 2296.9 | 2305.3 | 2294.7 |
| 10° | 2313.9 | 2299.0 | 2256.3 | 2249.8 | 2237.1 |
| 12.5° | 2281.9 | 2262.7 | 2205.0 | 2192.3 | 2168.7 |
| 15° | 2243.5 | 2219.9 | 2147.4 | 2106.9 | 2085.6 |
| 17.5° | 2198.6 | 2164.5 | 2074.8 | 2027.8 | 1993.6 |
| 20° | 2147.4 | 2104.6 | 1998.0 | 1944.7 | 1897.6 |
| 22.5° | 2092.0 | 2042.8 | 1918.9 | 1846.4 | 1814.5 |
| 25° | 2036.5 | 1968.0 | 1827.2 | 1739.8 | 1707.6 |
| 27.5° | 1970.3 | 1897.6 | 1741.8 | 1641.5 | 1592.4 |
| 30° | 1899.9 | 1818.6 | 1647.8 | 1539.1 | 1481.4 |
| 32.5° | 1831.5 | 1733.2 | 1558.4 | 1430.2 | 1376.7 |
| 35° | 1754.7 | 1645.8 | 1458.1 | 1323.6 | 1276.4 |
| 37.5° | 1680.0 | 1562.4 | 1364.1 | 1216.6 | 1163.4 |
| 40° | 1600.9 | 1473.0 | 1265.8 | 1114.3 | 1058.7 |
| 42.5° | 1519.9 | 1383.3 | 1167.7 | 1009.6 | 956.4 |
| 45° | 1434.5 | 1291.4 | 1067.4 | 915.7 | 864.5 |
| 47.5° | 1353.4 | 1201.9 | 971.3 | 819.6 | 772.7 |
| 50° | 1263.7 | 1112.2 | 877.3 | 729.9 | 685.3 |
| 52.5° | 1176.1 | 1015.9 | 787.7 | 646.8 | 606.3 |
| 55° | 1090.7 | 924.2 | 693.7 | 565.7 | 525.2 |
| 57.5° | 1003.3 | 832.5 | 610.6 | 491.0 | 456.8 |
| 60° | 913.6 | 742.8 | 522.9 | 414.3 | 380.0 |
| 62.5° | 826.1 | 655.4 | 448.2 | 345.8 | 328.8 |
| 65° | 736.5 | 563.5 | 371.4 | 299.0 | 292.4 |
| 67.5° | 651.1 | 478.1 | 299.0 | 262.4 | 256.2 |
| 70° | 561.4 | 394.9 | 247.5 | 226.2 | 217.6 |
| 72.5° | 476.1 | 318.0 | 207.0 | 190.0 | 185.7 |
| 75° | 392.7 | 243.2 | 170.7 | 155.8 | 153.8 |
| 77.5° | 309.6 | 172.8 | 134.5 | 125.9 | 121.6 |
| 80° | 232.6 | 123.8 | 102.4 | 94.0 | 94.0 |
| 82.5° | 162.2 | 83.3 | 70.4 | 66.1 | 66.1 |
| 85° | 91.7 | 46.9 | 40.5 | 40.5 | 40.5 |
| 87.5° | 34.2 | 17.0 | 17.0 | 14.9 | 14.9 |
| 90° | 1.3 | 16.7 | 27.8 | 34.9 | 37.6 |
| 92.5° | 34.9 | 29.3 | 33.4 | 36.3 | 37.6 |
| 95° | 90.5 | 44.5 | 54.3 | 61.4 | 59.9 |
| 97.5° | 163.0 | 48.8 | 71.0 | 75.3 | 76.6 |
| 100° | 246.8 | 55.8 | 79.4 | 90.5 | 93.4 |
| 102.5° | 338.6 | 336.0 | 82.3 | 97.5 | 101.7 |
| 105° | 423.7 | 465.5 | 85.0 | 100.3 | 105.9 |
| 107.5° | 522.6 | 557.4 | 87.9 | 103.1 | 108.8 |
| 110° | 617.5 | 646.6 | 243.9 | 104.6 | 110.1 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 706.7 | 731.6 | 708.0 | 107.2 | 111.5 |
| 115° | 801.4 | 825.0 | 859.9 | 214.7 | 114.4 |
| 117.5° | 883.6 | 911.4 | 935.2 | 735.8 | 370.7 |
| 120° | 975.6 | 996.5 | 1021.7 | 1038.4 | 850.2 |
| 122.5° | 1053.5 | 1075.9 | 1103.9 | 1112.1 | 1113.6 |
| 125° | 1133.0 | 1151.2 | 1177.7 | 1187.5 | 1191.6 |
| 127.5° | 1205.5 | 1225.0 | 1246.0 | 1260.0 | 1261.3 |
| 130° | 1273.8 | 1296.2 | 1311.4 | 1326.8 | 1325.5 |
| 132.5° | 1343.5 | 1361.7 | 1377.0 | 1389.5 | 1388.2 |
| 135° | 1402.1 | 1424.4 | 1436.9 | 1450.9 | 1448.1 |
| 137.5° | 1463.3 | 1480.1 | 1494.1 | 1508.1 | 1503.9 |
| 140° | 1523.2 | 1534.5 | 1549.7 | 1562.3 | 1555.3 |
| 142.5° | 1573.5 | 1583.3 | 1601.3 | 1612.4 | 1605.5 |
| 145° | 1626.5 | 1625.1 | 1648.7 | 1658.5 | 1651.5 |
| 147.5° | 1672.3 | 1668.3 | 1691.9 | 1698.8 | 1693.4 |
| 150° | 1717.0 | 1707.3 | 1729.7 | 1737.9 | 1731.0 |
| 152.5° | 1754.6 | 1743.5 | 1764.4 | 1772.8 | 1763.1 |
| 155° | 1790.9 | 1778.4 | 1795.1 | 1803.4 | 1792.4 |
| 157.5° | 1820.2 | 1809.1 | 1821.6 | 1831.4 | 1820.2 |
| 160° | 1845.3 | 1836.9 | 1845.3 | 1853.6 | 1843.8 |
| 162.5° | 1867.5 | 1859.2 | 1866.1 | 1875.9 | 1863.4 |
| 165° | 1887.0 | 1878.8 | 1882.8 | 1892.6 | 1882.8 |
| 167.5° | 1902.4 | 1893.9 | 1898.3 | 1908.0 | 1895.5 |
| 170° | 1915.0 | 1906.6 | 1909.3 | 1919.1 | 1906.6 |
| 172.5° | 1923.3 | 1915.0 | 1917.8 | 1927.5 | 1915.0 |
| 175° | 1930.2 | 1920.4 | 1923.3 | 1933.0 | 1919.1 |
| 177.5° | 1933.0 | 1923.3 | 1924.8 | 1934.5 | 1921.9 |
| 180° | 1926.1 | 1926.1 | 1926.1 | 1926.1 | 1926.1 |



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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 | 10.20 | 11.00 | 11.20 | 12.01 | 13.33 | 6.16 | 6.97 | 7.16 | 7.97 | 9.29 |
| | 3H | 11.87 | 12.59 | 12.88 | 13.60 | 14.95 | 7.34 | 8.06 | 8.35 | 9.07 | 10.42 |
| | 4H | 12.48 | 13.16 | 13.50 | 14.17 | 15.53 | 7.79 | 8.47 | 8.81 | 9.48 | 10.84 |
| | 6H | 12.90 | 13.52 | 13.92 | 14.54 | 15.91 | 8.10 | 8.73 | 9.13 | 9.74 | 11.11 |
| | 8H | 13.02 | 13.61 | 14.05 | 14.65 | 16.01 | 8.19 | 8.78 | 9.22 | 9.82 | 11.18 |
| | 12H | 13.08 | 13.64 | 14.12 | 14.67 | 16.06 | 8.23 | 8.79 | 9.27 | 9.82 | 11.21 |
| 4H | 2H | 10.22 | 10.89 | 11.24 | 11.91 | 13.26 | 6.75 | 7.43 | 7.78 | 8.45 | 9.80 |
| | 3H | 12.04 | 12.60 | 13.07 | 13.64 | 15.01 | 8.09 | 8.66 | 9.13 | 9.70 | 11.07 |
| | 4H | 12.73 | 13.24 | 13.77 | 14.27 | 15.67 | 8.64 | 9.15 | 9.68 | 10.19 | 11.58 |
| | 6H | 13.23 | 13.68 | 14.28 | 14.73 | 16.12 | 9.05 | 9.49 | 10.10 | 10.55 | 11.93 |
| | 8H | 13.41 | 13.82 | 14.46 | 14.87 | 16.27 | 9.17 | 9.58 | 10.22 | 10.63 | 12.04 |
| | 12H | 13.50 | 13.87 | 14.57 | 14.93 | 16.34 | 9.23 | 9.60 | 10.30 | 10.67 | 12.08 |
| 8H | 4H | 12.69 | 13.10 | 13.74 | 14.15 | 15.55 | 8.91 | 9.32 | 9.96 | 10.37 | 11.78 |
| | 6H | 13.25 | 13.59 | 14.32 | 14.68 | 16.08 | 9.42 | 9.76 | 10.49 | 10.85 | 12.25 |
| | 8H | 13.46 | 13.76 | 14.54 | 14.84 | 16.26 | 9.61 | 9.90 | 10.69 | 10.98 | 12.40 |
| | 12H | 13.60 | 13.86 | 14.68 | 14.93 | 16.39 | 9.72 | 9.98 | 10.80 | 11.05 | 12.51 |
| 12H | 4H | 12.64 | 13.01 | 13.71 | 14.08 | 15.48 | 8.91 | 9.29 | 9.98 | 10.35 | 11.76 |
| | 6H | 13.22 | 13.52 | 14.30 | 14.60 | 16.02 | 9.47 | 9.77 | 10.55 | 10.84 | 12.26 |
| | 8H | 13.44 | 13.70 | 14.52 | 14.77 | 16.23 | 9.67 | 9.93 | 10.75 | 11.01 | 12.47 |