

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: P927244

Luminaire Tested: DFN2DIP-HX4F0-050D070US835-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927244
REPORT IS A COMBINATION OF REPORTS P900875 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-050D070US835-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

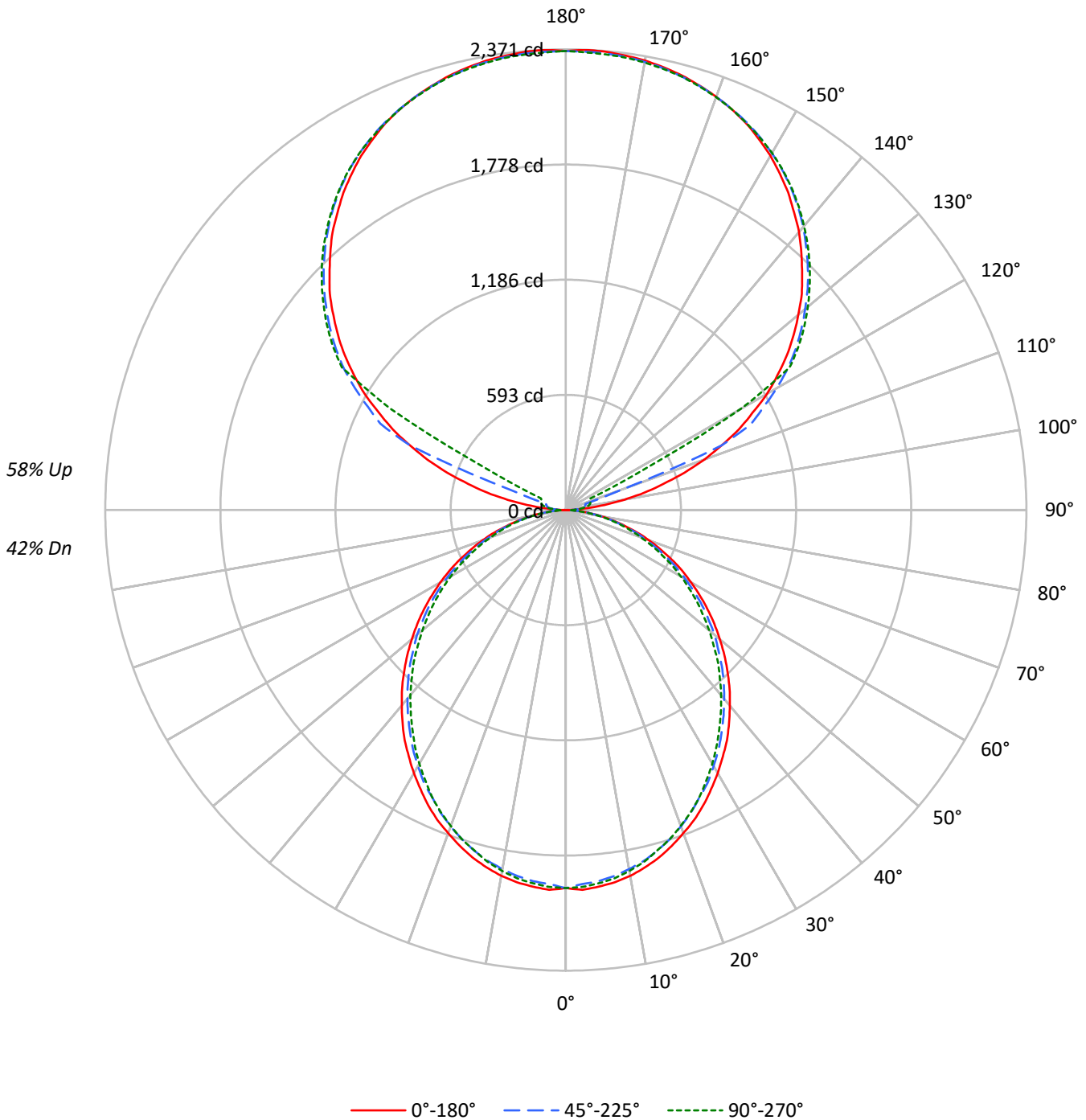
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 11880.0 lumens
Efficiency: N/A
Efficacy: 124.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 95.7
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 | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 | 49 | 49 | 49 | 42 |
| 1 | 96 | 92 | 88 | 84 | 87 | 84 | 80 | 78 | 69 | 67 | 65 | 55 | 54 | 52 | 43 | 42 | 41 | 41 | 41 | 41 | 35 |
| 2 | 87 | 80 | 74 | 69 | 79 | 73 | 68 | 64 | 60 | 57 | 53 | 49 | 46 | 44 | 38 | 36 | 34 | 34 | 34 | 34 | 29 |
| 3 | 80 | 70 | 63 | 57 | 72 | 64 | 58 | 53 | 53 | 49 | 45 | 43 | 40 | 37 | 33 | 31 | 29 | 29 | 29 | 29 | 25 |
| 4 | 73 | 62 | 54 | 48 | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 38 | 35 | 32 | 30 | 27 | 25 | 25 | 25 | 25 | 21 |
| 5 | 67 | 55 | 47 | 41 | 61 | 51 | 44 | 39 | 42 | 37 | 33 | 34 | 30 | 27 | 27 | 24 | 22 | 22 | 22 | 22 | 19 |
| 6 | 62 | 50 | 42 | 36 | 56 | 46 | 39 | 33 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 22 | 19 | 19 | 19 | 19 | 16 |
| 7 | 57 | 45 | 37 | 31 | 52 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 | 17 | 17 | 17 | 14 |
| 8 | 53 | 41 | 33 | 28 | 48 | 37 | 31 | 26 | 31 | 26 | 22 | 26 | 22 | 19 | 20 | 18 | 15 | 15 | 15 | 15 | 13 |
| 9 | 49 | 37 | 30 | 25 | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 | 14 | 14 | 14 | 12 |
| 10 | 46 | 34 | 27 | 22 | 42 | 31 | 25 | 21 | 26 | 21 | 18 | 22 | 18 | 15 | 18 | 15 | 13 | 13 | 13 | 13 | 11 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1447 | 1447 | 1447 |
| 5° | 1449 | 1427 | 1436 |
| 10° | 1437 | 1408 | 1417 |
| 15° | 1416 | 1385 | 1386 |
| 20° | 1388 | 1352 | 1355 |
| 25° | 1360 | 1314 | 1320 |
| 30° | 1324 | 1278 | 1274 |
| 35° | 1291 | 1236 | 1226 |
| 40° | 1249 | 1194 | 1180 |
| 45° | 1208 | 1151 | 1133 |
| 50° | 1163 | 1106 | 1078 |
| 55° | 1116 | 1055 | 1028 |
| 60° | 1062 | 993 | 971 |
| 65° | 1004 | 930 | 903 |
| 70° | 930 | 852 | 831 |
| 75° | 827 | 759 | 764 |
| 80° | 704 | 641 | 635 |
| 85° | 511 | 437 | 422 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1214 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 183.1 | 1.5 |
| 10°-20° | 515.2 | 4.3 |
| 20°-30° | 757.2 | 6.4 |
| 30°-40° | 879.4 | 7.4 |
| 40°-50° | 878.3 | 7.4 |
| 50°-60° | 765.8 | 6.4 |
| 60°-70° | 566.1 | 4.8 |
| 70°-80° | 320.3 | 2.7 |
| 80°-90° | 88.7 | 0.7 |
| 90°-100° | 77.9 | 0.7 |
| 100°-110° | 290.4 | 2.4 |
| 110°-120° | 770.2 | 6.5 |
| 120°-130° | 1277.4 | 10.8 |
| 130°-140° | 1356.9 | 11.4 |
| 140°-150° | 1261.1 | 10.6 |
| 150°-160° | 1013.9 | 8.5 |
| 160°-170° | 653.3 | 5.5 |
| 170°-180° | 224.9 | 1.9 |
| 0°-30° | 1455.5 | 12.3 |
| 0°-40° | 2334.9 | 19.7 |
| 0°-60° | 3979.0 | 33.5 |
| 0°-90° | 4954.2 | 41.7 |
| 90°-120° | 1138.5 | 9.6 |
| 90°-150° | 5033.8 | 42.4 |
| 90°-180° | 6926.0 | 58.3 |
| 0°-180° | 11880.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1946 | 1946 | 1946 | 1946 | 1946 | |
| 5° | 1946 | 1938 | 1918 | 1932 | 1929 | 185 |
| 15° | 1852 | 1841 | 1816 | 1824 | 1815 | 522 |
| 25° | 1676 | 1661 | 1630 | 1633 | 1630 | 771 |
| 35° | 1446 | 1428 | 1398 | 1386 | 1377 | 903 |
| 45° | 1177 | 1164 | 1136 | 1115 | 1108 | 908 |
| 55° | 891 | 879 | 857 | 834 | 825 | 796 |
| 65° | 601 | 589 | 571 | 554 | 544 | 594 |
| 75° | 314 | 311 | 301 | 290 | 294 | 335 |
| 85° | 77 | 75 | 73 | 67 | 66 | 85 |
| 90° | 2 | 20 | 34 | 43 | 46 | 11 |
| 95° | 111 | 55 | 67 | 75 | 74 | 131 |
| 105° | 520 | 571 | 104 | 123 | 130 | 555 |
| 115° | 983 | 1012 | 1055 | 263 | 140 | 968 |
| 125° | 1390 | 1412 | 1444 | 1456 | 1462 | 1239 |
| 135° | 1720 | 1747 | 1762 | 1780 | 1776 | 1328 |
| 145° | 1995 | 1993 | 2022 | 2034 | 2026 | 1248 |
| 155° | 2197 | 2181 | 2202 | 2212 | 2198 | 1012 |
| 165° | 2314 | 2304 | 2309 | 2321 | 2309 | 654 |
| 175° | 2368 | 2356 | 2359 | 2371 | 2354 | 225 |
| 180° | 2362 | 2362 | 2362 | 2362 | 2362 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1945.5 | 1945.5 | 1945.5 | 1945.5 | 1945.5 |
| 2.5° | 1956.8 | 1947.5 | 1926.9 | 1945.5 | 1942.0 |
| 5° | 1945.5 | 1938.2 | 1917.5 | 1932.4 | 1928.9 |
| 7.5° | 1932.4 | 1921.3 | 1900.7 | 1915.8 | 1912.0 |
| 10° | 1912.0 | 1898.9 | 1876.5 | 1891.3 | 1885.8 |
| 12.5° | 1883.8 | 1872.7 | 1850.3 | 1859.6 | 1855.8 |
| 15° | 1852.0 | 1840.9 | 1816.5 | 1824.1 | 1814.7 |
| 17.5° | 1812.7 | 1801.6 | 1777.2 | 1786.5 | 1777.2 |
| 20° | 1769.7 | 1758.6 | 1732.4 | 1737.9 | 1730.6 |
| 22.5° | 1726.8 | 1709.9 | 1685.5 | 1685.5 | 1681.7 |
| 25° | 1676.2 | 1661.3 | 1629.5 | 1633.1 | 1629.5 |
| 27.5° | 1620.0 | 1606.9 | 1582.7 | 1577.1 | 1567.8 |
| 30° | 1564.0 | 1549.0 | 1521.0 | 1515.4 | 1507.9 |
| 32.5° | 1504.1 | 1493.0 | 1463.0 | 1451.7 | 1444.2 |
| 35° | 1446.1 | 1427.5 | 1397.5 | 1386.2 | 1376.9 |
| 37.5° | 1380.6 | 1363.8 | 1333.8 | 1320.7 | 1311.4 |
| 40° | 1313.4 | 1298.3 | 1268.3 | 1251.6 | 1244.1 |
| 42.5° | 1247.9 | 1232.8 | 1203.0 | 1184.1 | 1173.0 |
| 45° | 1176.8 | 1163.7 | 1135.5 | 1115.1 | 1107.5 |
| 47.5° | 1107.5 | 1094.4 | 1064.5 | 1043.8 | 1032.7 |
| 50° | 1034.5 | 1025.2 | 999.0 | 972.8 | 963.4 |
| 52.5° | 963.4 | 950.3 | 926.1 | 905.5 | 892.4 |
| 55° | 890.6 | 879.3 | 856.8 | 834.4 | 825.1 |
| 57.5° | 817.5 | 808.2 | 783.8 | 761.4 | 753.8 |
| 60° | 744.5 | 737.2 | 711.0 | 690.3 | 684.8 |
| 62.5° | 673.5 | 660.4 | 641.7 | 623.0 | 615.5 |
| 65° | 600.6 | 589.3 | 570.6 | 553.8 | 544.4 |
| 67.5° | 525.8 | 516.3 | 499.6 | 486.5 | 478.9 |
| 70° | 456.5 | 449.0 | 432.1 | 419.0 | 411.7 |
| 72.5° | 385.5 | 377.9 | 368.6 | 355.5 | 349.9 |
| 75° | 314.2 | 310.6 | 301.1 | 290.0 | 293.8 |
| 77.5° | 250.7 | 243.1 | 239.4 | 233.8 | 228.3 |
| 80° | 187.2 | 185.2 | 181.4 | 175.9 | 172.1 |
| 82.5° | 127.2 | 127.2 | 125.4 | 117.9 | 117.9 |
| 85° | 76.6 | 74.8 | 73.0 | 67.3 | 65.5 |
| 87.5° | 33.7 | 30.0 | 26.2 | 20.6 | 18.7 |
| 90° | 1.6 | 20.5 | 34.1 | 42.8 | 46.1 |
| 92.5° | 42.8 | 35.9 | 41.0 | 44.5 | 46.1 |
| 95° | 111.0 | 54.6 | 66.6 | 75.3 | 73.5 |
| 97.5° | 199.9 | 59.9 | 87.1 | 92.4 | 94.0 |
| 100° | 302.7 | 68.4 | 97.4 | 111.0 | 114.5 |
| 102.5° | 415.3 | 412.1 | 100.9 | 119.6 | 124.8 |
| 105° | 519.7 | 571.0 | 104.3 | 123.0 | 129.9 |
| 107.5° | 641.0 | 683.7 | 107.8 | 126.5 | 133.4 |
| 110° | 757.4 | 793.1 | 299.2 | 128.3 | 135.0 |



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CATALOG NUMBER: DFN2DIP-HX4F0-050D070US835-FLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 866.8 | 897.4 | 868.4 | 131.5 | 136.8 |
| 115° | 982.9 | 1011.9 | 1054.7 | 263.3 | 140.3 |
| 117.5° | 1083.8 | 1117.9 | 1147.1 | 902.5 | 454.7 |
| 120° | 1196.6 | 1222.2 | 1253.1 | 1273.6 | 1042.8 |
| 122.5° | 1292.2 | 1319.6 | 1354.0 | 1364.1 | 1365.9 |
| 125° | 1389.7 | 1412.0 | 1444.5 | 1456.5 | 1461.5 |
| 127.5° | 1478.6 | 1502.5 | 1528.3 | 1545.4 | 1547.0 |
| 130° | 1562.4 | 1589.8 | 1608.5 | 1627.4 | 1625.8 |
| 132.5° | 1647.9 | 1670.2 | 1688.9 | 1704.3 | 1702.7 |
| 135° | 1719.7 | 1747.1 | 1762.4 | 1779.6 | 1776.2 |
| 137.5° | 1794.8 | 1815.4 | 1832.6 | 1849.7 | 1844.6 |
| 140° | 1868.3 | 1882.1 | 1900.8 | 1916.2 | 1907.7 |
| 142.5° | 1930.0 | 1942.0 | 1964.1 | 1977.7 | 1969.2 |
| 145° | 1995.0 | 1993.2 | 2022.2 | 2034.2 | 2025.7 |
| 147.5° | 2051.2 | 2046.2 | 2075.2 | 2083.7 | 2077.0 |
| 150° | 2106.0 | 2094.1 | 2121.5 | 2131.6 | 2123.1 |
| 152.5° | 2152.1 | 2138.5 | 2164.1 | 2174.4 | 2162.5 |
| 155° | 2196.6 | 2181.3 | 2201.8 | 2212.0 | 2198.4 |
| 157.5° | 2232.5 | 2218.9 | 2234.3 | 2246.3 | 2232.5 |
| 160° | 2263.4 | 2253.0 | 2263.4 | 2273.5 | 2261.5 |
| 162.5° | 2290.6 | 2280.4 | 2288.9 | 2300.9 | 2285.5 |
| 165° | 2314.5 | 2304.4 | 2309.4 | 2321.4 | 2309.4 |
| 167.5° | 2333.4 | 2323.0 | 2328.3 | 2340.3 | 2324.9 |
| 170° | 2348.8 | 2338.5 | 2341.9 | 2353.9 | 2338.5 |
| 172.5° | 2359.0 | 2348.8 | 2352.3 | 2364.2 | 2348.8 |
| 175° | 2367.5 | 2355.5 | 2359.0 | 2370.9 | 2353.9 |
| 177.5° | 2370.9 | 2359.0 | 2360.8 | 2372.8 | 2357.3 |
| 180° | 2362.4 | 2362.4 | 2362.4 | 2362.4 | 2362.4 |



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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 | 7.74 | 8.53 | 8.76 | 9.56 | 10.95 | 7.30 | 8.10 | 8.33 | 9.13 | 10.51 |
| | 3H | 9.39 | 10.10 | 10.43 | 11.14 | 12.55 | 8.92 | 9.63 | 9.96 | 10.67 | 12.08 |
| | 4H | 9.98 | 10.65 | 11.03 | 11.69 | 13.11 | 9.50 | 10.18 | 10.55 | 11.22 | 12.63 |
| | 6H | 10.37 | 10.99 | 11.43 | 12.04 | 13.47 | 9.90 | 10.52 | 10.96 | 11.57 | 12.99 |
| | 8H | 10.48 | 11.07 | 11.54 | 12.13 | 13.55 | 10.00 | 10.59 | 11.06 | 11.66 | 13.08 |
| | 12H | 10.52 | 11.08 | 11.59 | 12.14 | 13.59 | 10.04 | 10.60 | 11.11 | 11.66 | 13.10 |
| 4H | 2H | 8.19 | 8.86 | 9.24 | 9.91 | 11.32 | 7.85 | 8.52 | 8.90 | 9.56 | 10.97 |
| | 3H | 10.05 | 10.61 | 11.11 | 11.68 | 13.11 | 9.66 | 10.22 | 10.72 | 11.29 | 12.72 |
| | 4H | 10.76 | 11.28 | 11.83 | 12.34 | 13.79 | 10.36 | 10.87 | 11.43 | 11.94 | 13.38 |
| | 6H | 11.28 | 11.72 | 12.35 | 12.80 | 14.24 | 10.87 | 11.31 | 11.94 | 12.39 | 13.84 |
| | 8H | 11.42 | 11.84 | 12.50 | 12.92 | 14.37 | 11.01 | 11.42 | 12.09 | 12.50 | 13.96 |
| | 12H | 11.49 | 11.87 | 12.59 | 12.96 | 14.42 | 11.07 | 11.45 | 12.17 | 12.54 | 14.00 |
| 8H | 4H | 10.96 | 11.37 | 12.03 | 12.45 | 13.90 | 10.59 | 11.01 | 11.67 | 12.09 | 13.54 |
| | 6H | 11.58 | 11.93 | 12.69 | 13.05 | 14.50 | 11.22 | 11.56 | 12.32 | 12.68 | 14.14 |
| | 8H | 11.81 | 12.10 | 12.91 | 13.21 | 14.68 | 11.44 | 11.74 | 12.54 | 12.84 | 14.31 |
| | 12H | 11.93 | 12.20 | 13.05 | 13.30 | 14.81 | 11.55 | 11.81 | 12.66 | 12.91 | 14.42 |
| 12H | 4H | 10.94 | 11.31 | 12.03 | 12.40 | 13.87 | 10.59 | 10.96 | 11.68 | 12.05 | 13.51 |
| | 6H | 11.61 | 11.91 | 12.72 | 13.02 | 14.49 | 11.26 | 11.56 | 12.37 | 12.67 | 14.14 |
| | 8H | 11.85 | 12.12 | 12.96 | 13.22 | 14.73 | 11.50 | 11.76 | 12.61 | 12.86 | 14.37 |