

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: P928662

Luminaire Tested: DFN2DIP-HX4F0-080D100US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928662
REPORT IS A COMBINATION OF REPORTS P900936 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D100US930-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

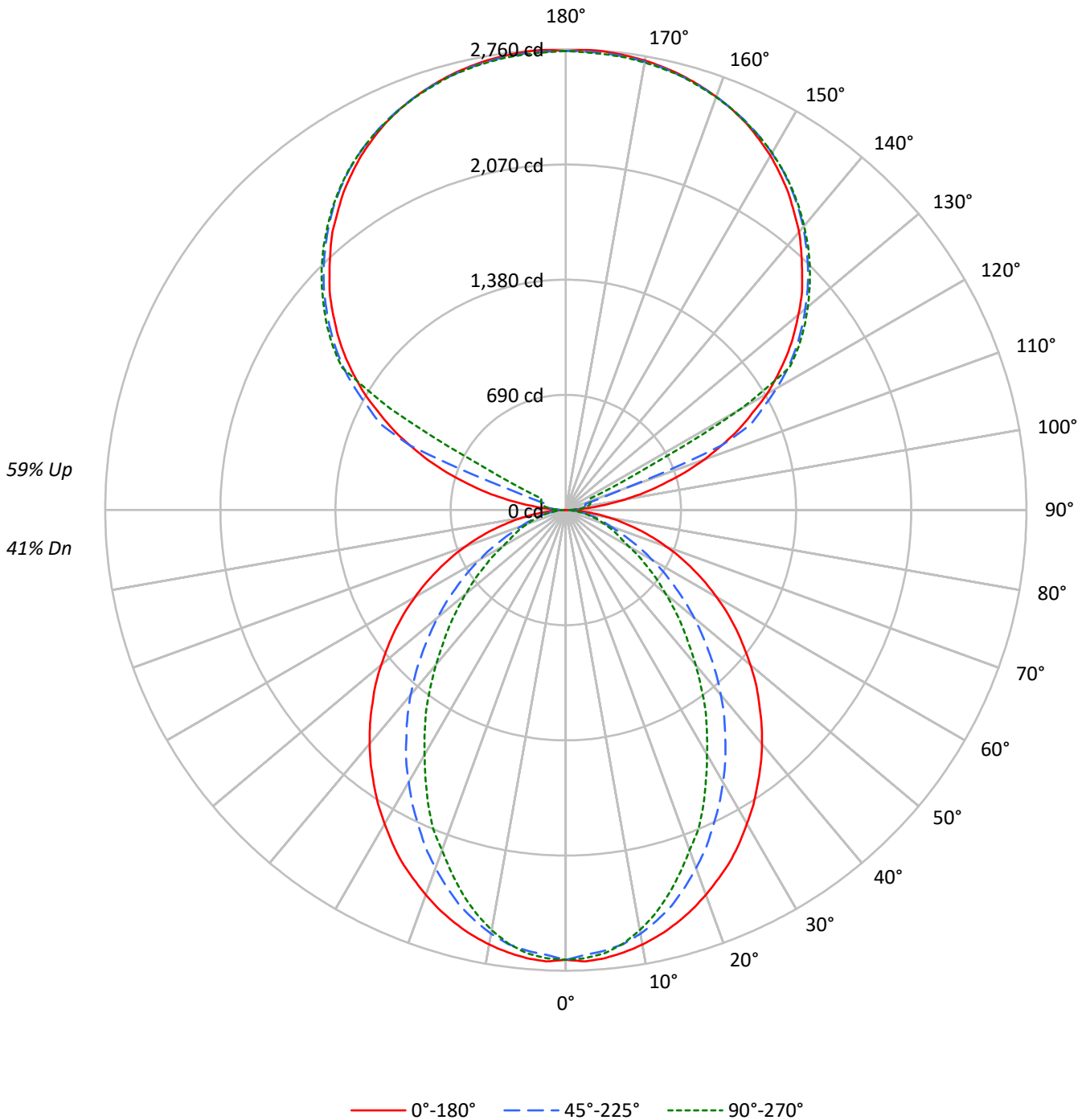
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13610.6 lumens
Efficiency: N/A
Efficacy: 89.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 152.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P928662
CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLLONL

Luminous Intensity Polar Plot





TEST NUMBER: P928662

CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLLONL

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 | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 78 | 78 | 78 | 62 | 62 | 62 | 48 | 48 | 48 | 48 | 48 | 48 | 41 |
| 1 | 96 | 92 | 88 | 85 | 87 | 84 | 81 | 78 | 69 | 67 | 65 | 55 | 54 | 53 | 43 | 42 | 41 | 41 | 41 | 41 | 35 |
| 2 | 88 | 81 | 75 | 70 | 80 | 74 | 69 | 65 | 61 | 57 | 54 | 49 | 47 | 44 | 38 | 36 | 35 | 35 | 35 | 35 | 30 |
| 3 | 80 | 71 | 64 | 59 | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 34 | 32 | 30 | 30 | 30 | 30 | 26 |
| 4 | 74 | 63 | 56 | 50 | 67 | 58 | 52 | 46 | 48 | 43 | 40 | 39 | 36 | 33 | 31 | 28 | 26 | 26 | 26 | 26 | 23 |
| 5 | 68 | 57 | 49 | 43 | 62 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 32 | 29 | 28 | 25 | 23 | 23 | 23 | 23 | 20 |
| 6 | 62 | 51 | 43 | 37 | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 28 | 25 | 25 | 23 | 21 | 21 | 21 | 21 | 18 |
| 7 | 58 | 46 | 38 | 33 | 53 | 42 | 36 | 31 | 36 | 30 | 27 | 29 | 25 | 23 | 23 | 21 | 19 | 19 | 19 | 19 | 16 |
| 8 | 54 | 42 | 34 | 29 | 49 | 39 | 32 | 27 | 33 | 27 | 24 | 27 | 23 | 20 | 21 | 19 | 17 | 17 | 17 | 17 | 14 |
| 9 | 50 | 38 | 31 | 26 | 46 | 35 | 29 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 15 | 15 | 13 |
| 10 | 47 | 35 | 28 | 23 | 43 | 32 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 18 | 16 | 14 | 14 | 14 | 14 | 12 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2004 | 2004 | 2004 |
| 5° | 2007 | 1972 | 1985 |
| 10° | 1987 | 1934 | 1920 |
| 15° | 1960 | 1870 | 1820 |
| 20° | 1924 | 1782 | 1698 |
| 25° | 1887 | 1683 | 1580 |
| 30° | 1838 | 1582 | 1430 |
| 35° | 1789 | 1474 | 1298 |
| 40° | 1740 | 1361 | 1147 |
| 45° | 1682 | 1236 | 1010 |
| 50° | 1623 | 1110 | 876 |
| 55° | 1561 | 975 | 748 |
| 60° | 1489 | 835 | 616 |
| 65° | 1407 | 691 | 554 |
| 70° | 1307 | 558 | 502 |
| 75° | 1181 | 492 | 457 |
| 80° | 999 | 414 | 396 |
| 85° | 699 | 277 | 299 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1682 cd/sqm



TEST NUMBER: P928662

CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLONL

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 252.6 | 1.9 |
| 10°-20° | 693.3 | 5.1 |
| 20°-30° | 973.4 | 7.2 |
| 30°-40° | 1061.0 | 7.8 |
| 40°-50° | 975.2 | 7.2 |
| 50°-60° | 765.9 | 5.6 |
| 60°-70° | 498.5 | 3.7 |
| 70°-80° | 256.6 | 1.9 |
| 80°-90° | 70.3 | 0.5 |
| 90°-100° | 90.7 | 0.7 |
| 100°-110° | 338.1 | 2.5 |
| 110°-120° | 896.7 | 6.6 |
| 120°-130° | 1487.3 | 10.9 |
| 130°-140° | 1579.8 | 11.6 |
| 140°-150° | 1468.3 | 10.8 |
| 150°-160° | 1180.4 | 8.7 |
| 160°-170° | 760.6 | 5.6 |
| 170°-180° | 261.8 | 1.9 |
| 0°-30° | 1919.2 | 14.1 |
| 0°-40° | 2980.3 | 21.9 |
| 0°-60° | 4721.4 | 34.7 |
| 0°-90° | 5546.9 | 40.8 |
| 90°-120° | 1325.5 | 9.7 |
| 90°-150° | 5860.8 | 43.1 |
| 90°-180° | 8064.0 | 59.2 |
| 0°-180° | 13610.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2695 | 2695 | 2695 | 2695 | 2695 | |
| 5° | 2695 | 2683 | 2651 | 2673 | 2666 | 256 |
| 15° | 2563 | 2536 | 2453 | 2407 | 2383 | 722 |
| 25° | 2326 | 2248 | 2088 | 1988 | 1951 | 1070 |
| 35° | 2005 | 1880 | 1666 | 1512 | 1458 | 1255 |
| 45° | 1639 | 1475 | 1219 | 1046 | 988 | 1266 |
| 55° | 1246 | 1056 | 792 | 646 | 600 | 1113 |
| 65° | 841 | 644 | 424 | 342 | 334 | 834 |
| 75° | 449 | 278 | 195 | 178 | 176 | 475 |
| 85° | 105 | 54 | 46 | 46 | 46 | 120 |
| 90° | 2 | 24 | 40 | 50 | 54 | 13 |
| 95° | 129 | 64 | 78 | 88 | 86 | 153 |
| 105° | 605 | 665 | 122 | 143 | 151 | 646 |
| 115° | 1144 | 1178 | 1228 | 306 | 163 | 1127 |
| 125° | 1618 | 1644 | 1682 | 1696 | 1702 | 1443 |
| 135° | 2002 | 2034 | 2052 | 2072 | 2068 | 1547 |
| 145° | 2323 | 2321 | 2354 | 2368 | 2358 | 1453 |
| 155° | 2558 | 2540 | 2564 | 2575 | 2560 | 1178 |
| 165° | 2695 | 2683 | 2689 | 2703 | 2689 | 761 |
| 175° | 2756 | 2742 | 2746 | 2760 | 2741 | 262 |
| 180° | 2750 | 2750 | 2750 | 2750 | 2750 | |



TEST NUMBER: P928662

CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2694.7 | 2694.7 | 2694.7 | 2694.7 | 2694.7 |
| 2.5° | 2706.9 | 2694.7 | 2667.8 | 2692.4 | 2687.5 |
| 5° | 2694.7 | 2682.6 | 2650.7 | 2672.7 | 2665.5 |
| 7.5° | 2672.7 | 2658.2 | 2624.1 | 2633.7 | 2621.4 |
| 10° | 2643.5 | 2626.4 | 2577.8 | 2570.3 | 2555.8 |
| 12.5° | 2607.0 | 2585.0 | 2519.0 | 2504.5 | 2477.6 |
| 15° | 2563.0 | 2536.1 | 2453.3 | 2407.0 | 2382.7 |
| 17.5° | 2511.7 | 2472.7 | 2370.3 | 2316.7 | 2277.6 |
| 20° | 2453.3 | 2404.4 | 2282.6 | 2221.8 | 2167.9 |
| 22.5° | 2389.9 | 2333.8 | 2192.3 | 2109.5 | 2073.0 |
| 25° | 2326.5 | 2248.4 | 2087.5 | 1987.6 | 1950.9 |
| 27.5° | 2250.9 | 2167.9 | 1989.9 | 1875.3 | 1819.2 |
| 30° | 2170.5 | 2077.6 | 1882.6 | 1758.4 | 1692.3 |
| 32.5° | 2092.3 | 1980.1 | 1780.4 | 1633.9 | 1572.9 |
| 35° | 2004.7 | 1880.2 | 1665.7 | 1512.1 | 1458.2 |
| 37.5° | 1919.2 | 1785.0 | 1558.4 | 1389.9 | 1329.1 |
| 40° | 1829.0 | 1682.8 | 1446.1 | 1272.9 | 1209.5 |
| 42.5° | 1736.4 | 1580.4 | 1334.0 | 1153.5 | 1092.6 |
| 45° | 1638.8 | 1475.3 | 1219.4 | 1046.1 | 987.6 |
| 47.5° | 1546.2 | 1373.1 | 1109.7 | 936.4 | 882.8 |
| 50° | 1443.7 | 1270.7 | 1002.4 | 833.9 | 782.9 |
| 52.5° | 1343.6 | 1160.6 | 899.8 | 739.0 | 692.7 |
| 55° | 1246.1 | 1055.9 | 792.5 | 646.3 | 600.0 |
| 57.5° | 1146.2 | 951.1 | 697.6 | 561.0 | 521.8 |
| 60° | 1043.7 | 848.7 | 597.4 | 473.2 | 434.2 |
| 62.5° | 943.9 | 748.7 | 512.1 | 395.1 | 375.7 |
| 65° | 841.4 | 643.7 | 424.3 | 341.6 | 334.0 |
| 67.5° | 743.9 | 546.2 | 341.6 | 299.8 | 292.7 |
| 70° | 641.4 | 451.3 | 282.8 | 258.4 | 248.7 |
| 72.5° | 543.8 | 363.2 | 236.5 | 217.1 | 212.1 |
| 75° | 448.7 | 277.9 | 195.1 | 178.0 | 175.7 |
| 77.5° | 353.7 | 197.4 | 153.7 | 143.8 | 139.0 |
| 80° | 265.7 | 141.6 | 117.0 | 107.3 | 107.3 |
| 82.5° | 185.2 | 95.2 | 80.4 | 75.6 | 75.6 |
| 85° | 104.8 | 53.5 | 46.3 | 46.3 | 46.3 |
| 87.5° | 39.0 | 19.4 | 19.4 | 17.1 | 17.1 |
| 90° | 1.9 | 23.9 | 39.7 | 49.9 | 53.6 |
| 92.5° | 49.9 | 41.8 | 47.8 | 51.8 | 53.6 |
| 95° | 129.3 | 63.6 | 77.5 | 87.7 | 85.6 |
| 97.5° | 232.8 | 69.7 | 101.4 | 107.5 | 109.5 |
| 100° | 352.4 | 79.6 | 113.4 | 129.3 | 133.3 |
| 102.5° | 483.5 | 479.8 | 117.4 | 139.2 | 145.3 |
| 105° | 605.1 | 664.8 | 121.5 | 143.2 | 151.3 |
| 107.5° | 746.4 | 796.0 | 125.5 | 147.3 | 155.3 |
| 110° | 881.7 | 923.4 | 348.3 | 149.4 | 157.1 |



TEST NUMBER: P928662

CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1009.1 | 1044.8 | 1011.1 | 153.1 | 159.3 |
| 115° | 1144.3 | 1178.2 | 1228.0 | 306.5 | 163.3 |
| 117.5° | 1261.8 | 1301.6 | 1335.5 | 1050.8 | 529.4 |
| 120° | 1393.2 | 1423.0 | 1458.9 | 1482.8 | 1214.1 |
| 122.5° | 1504.6 | 1536.4 | 1576.4 | 1588.2 | 1590.3 |
| 125° | 1618.0 | 1644.0 | 1681.8 | 1695.8 | 1701.6 |
| 127.5° | 1721.5 | 1749.4 | 1779.4 | 1799.3 | 1801.2 |
| 130° | 1819.1 | 1851.0 | 1872.8 | 1894.7 | 1892.8 |
| 132.5° | 1918.6 | 1944.6 | 1966.4 | 1984.3 | 1982.4 |
| 135° | 2002.3 | 2034.2 | 2051.9 | 2072.0 | 2068.0 |
| 137.5° | 2089.7 | 2113.6 | 2133.7 | 2153.6 | 2147.6 |
| 140° | 2175.2 | 2191.4 | 2213.1 | 2231.1 | 2221.1 |
| 142.5° | 2247.1 | 2261.1 | 2286.8 | 2302.6 | 2292.8 |
| 145° | 2322.8 | 2320.6 | 2354.5 | 2368.4 | 2358.4 |
| 147.5° | 2388.2 | 2382.3 | 2416.1 | 2426.0 | 2418.3 |
| 150° | 2452.0 | 2438.1 | 2470.0 | 2481.8 | 2471.9 |
| 152.5° | 2505.6 | 2489.8 | 2519.7 | 2531.6 | 2517.7 |
| 155° | 2557.5 | 2539.7 | 2563.6 | 2575.4 | 2559.6 |
| 157.5° | 2599.3 | 2583.5 | 2601.4 | 2615.3 | 2599.3 |
| 160° | 2635.2 | 2623.2 | 2635.2 | 2647.0 | 2633.1 |
| 162.5° | 2666.8 | 2655.0 | 2665.0 | 2678.9 | 2661.0 |
| 165° | 2694.7 | 2682.9 | 2688.8 | 2702.8 | 2688.8 |
| 167.5° | 2716.7 | 2704.7 | 2710.9 | 2724.8 | 2706.8 |
| 170° | 2734.7 | 2722.7 | 2726.7 | 2740.6 | 2722.7 |
| 172.5° | 2746.5 | 2734.7 | 2738.7 | 2752.7 | 2734.7 |
| 175° | 2756.4 | 2742.5 | 2746.5 | 2760.5 | 2740.6 |
| 177.5° | 2760.5 | 2746.5 | 2748.7 | 2762.6 | 2744.6 |
| 180° | 2750.5 | 2750.5 | 2750.5 | 2750.5 | 2750.5 |



TEST NUMBER: P928662
 CATALOG NUMBER: DFN2DIP-HX4F0-080D100US930-RLONL

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 | 8.63 | 9.39 | 9.67 | 10.43 | 11.83 | 4.61 | 5.37 | 5.65 | 6.41 | 7.81 |
| | 3H | 10.31 | 10.99 | 11.36 | 12.04 | 13.46 | 5.79 | 6.47 | 6.84 | 7.52 | 8.94 |
| | 4H | 10.91 | 11.56 | 11.97 | 12.61 | 14.03 | 6.24 | 6.88 | 7.30 | 7.94 | 9.36 |
| | 6H | 11.33 | 11.92 | 12.40 | 12.98 | 14.42 | 6.56 | 7.15 | 7.63 | 8.21 | 9.65 |
| | 8H | 11.46 | 12.02 | 12.53 | 13.09 | 14.52 | 6.65 | 7.21 | 7.72 | 8.28 | 9.72 |
| | 12H | 11.52 | 12.05 | 12.60 | 13.12 | 14.57 | 6.69 | 7.23 | 7.77 | 8.29 | 9.75 |
| 4H | 2H | 8.64 | 9.29 | 9.71 | 10.34 | 11.77 | 5.19 | 5.84 | 6.26 | 6.89 | 8.32 |
| | 3H | 10.47 | 11.00 | 11.54 | 12.08 | 13.52 | 6.54 | 7.08 | 7.61 | 8.15 | 9.59 |
| | 4H | 11.16 | 11.65 | 12.24 | 12.72 | 14.18 | 7.09 | 7.58 | 8.17 | 8.65 | 10.11 |
| | 6H | 11.67 | 12.09 | 12.76 | 13.18 | 14.64 | 7.50 | 7.92 | 8.59 | 9.02 | 10.47 |
| | 8H | 11.84 | 12.24 | 12.93 | 13.32 | 14.79 | 7.63 | 8.02 | 8.72 | 9.11 | 10.58 |
| | 12H | 11.94 | 12.29 | 13.04 | 13.39 | 14.87 | 7.70 | 8.05 | 8.80 | 9.15 | 10.62 |
| 8H | 4H | 11.12 | 11.51 | 12.21 | 12.60 | 14.07 | 7.36 | 7.75 | 8.45 | 8.84 | 10.31 |
| | 6H | 11.69 | 12.01 | 12.80 | 13.14 | 14.60 | 7.88 | 8.20 | 8.99 | 9.33 | 10.80 |
| | 8H | 11.90 | 12.19 | 13.02 | 13.30 | 14.78 | 8.07 | 8.36 | 9.19 | 9.47 | 10.95 |
| | 12H | 12.04 | 12.29 | 13.16 | 13.39 | 14.92 | 8.19 | 8.44 | 9.31 | 9.54 | 11.07 |
| 12H | 4H | 11.07 | 11.42 | 12.18 | 12.52 | 14.00 | 7.36 | 7.72 | 8.47 | 8.82 | 10.29 |
| | 6H | 11.66 | 11.95 | 12.78 | 13.05 | 14.54 | 7.93 | 8.21 | 9.05 | 9.32 | 10.81 |
| | 8H | 11.88 | 12.13 | 13.00 | 13.23 | 14.76 | 8.14 | 8.39 | 9.26 | 9.49 | 11.02 |