

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: P919684

Luminaire Tested: DFN2DIP-PN4F0-080D110US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919684
REPORT IS A COMBINATION OF REPORTS P899743 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-080D110US935-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

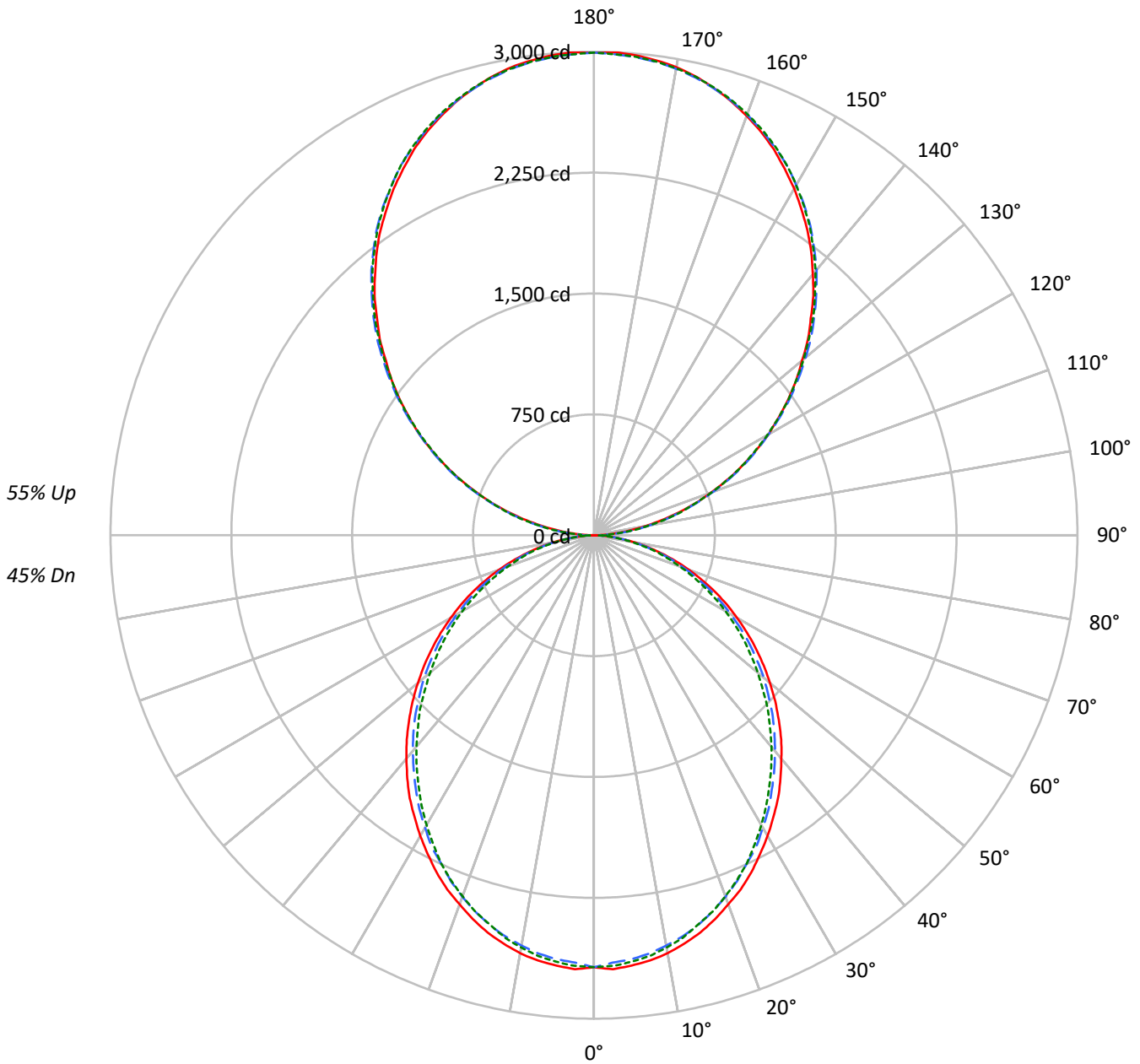
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15200.9 lumens
Efficiency: N/A
Efficacy: 90.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 168.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P919684
CATALOG NUMBER: DFN2DIP-PN4F0-080D110US935-FLLFL

Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



TEST NUMBER: P919684
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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 | 50 | 30 | 10 | 0 | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 65 | 65 | 65 | 51 | 51 | 51 | 45 | | | | | | | | |
| 1 | 97 | 92 | 88 | 85 | 88 | 85 | 81 | 78 | 71 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 | 38 | | | | | | | | |
| 2 | 88 | 81 | 75 | 69 | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 37 | 32 | | | | | | | | |
| 3 | 80 | 71 | 64 | 58 | 73 | 65 | 59 | 54 | 55 | 50 | 46 | 45 | 41 | 38 | 35 | 33 | 31 | 27 | | | | | | | | |
| 4 | 73 | 63 | 55 | 49 | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 40 | 36 | 33 | 32 | 29 | 27 | 23 | | | | | | | | |
| 5 | 67 | 56 | 48 | 42 | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 36 | 32 | 28 | 29 | 26 | 23 | 20 | | | | | | | | |
| 6 | 62 | 50 | 42 | 36 | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 21 | 18 | | | | | | | | |
| 7 | 57 | 45 | 37 | 32 | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 24 | 21 | 18 | 16 | | | | | | | | |
| 8 | 53 | 41 | 33 | 28 | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 | 14 | | | | | | | | |
| 9 | 49 | 37 | 30 | 25 | 45 | 35 | 28 | 23 | 29 | 24 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 13 | | | | | | | | |
| 10 | 46 | 34 | 27 | 22 | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 19 | 16 | 13 | 11 | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1956 | 1956 | 1956 |
| 5° | 1959 | 1929 | 1943 |
| 10° | 1944 | 1904 | 1917 |
| 15° | 1915 | 1873 | 1876 |
| 20° | 1876 | 1829 | 1834 |
| 25° | 1838 | 1778 | 1786 |
| 30° | 1790 | 1729 | 1724 |
| 35° | 1744 | 1672 | 1659 |
| 40° | 1688 | 1615 | 1597 |
| 45° | 1632 | 1557 | 1534 |
| 50° | 1571 | 1497 | 1461 |
| 55° | 1507 | 1427 | 1393 |
| 60° | 1434 | 1344 | 1316 |
| 65° | 1355 | 1258 | 1225 |
| 70° | 1255 | 1154 | 1128 |
| 75° | 1115 | 1028 | 1038 |
| 80° | 948 | 869 | 865 |
| 85° | 685 | 593 | 579 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2346 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 252.3 | 1.7 |
| 10°-20° | 709.8 | 4.7 |
| 20°-30° | 1043.1 | 6.9 |
| 30°-40° | 1211.4 | 8.0 |
| 40°-50° | 1209.9 | 8.0 |
| 50°-60° | 1055.0 | 6.9 |
| 60°-70° | 779.9 | 5.1 |
| 70°-80° | 441.2 | 2.9 |
| 80°-90° | 125.0 | 0.8 |
| 90°-100° | 185.3 | 1.2 |
| 100°-110° | 588.9 | 3.9 |
| 110°-120° | 1007.8 | 6.6 |
| 120°-130° | 1325.4 | 8.7 |
| 130°-140° | 1487.7 | 9.8 |
| 140°-150° | 1458.9 | 9.6 |
| 150°-160° | 1223.8 | 8.1 |
| 160°-170° | 811.6 | 5.3 |
| 170°-180° | 283.7 | 1.9 |
| 0°-30° | 2005.1 | 13.2 |
| 0°-40° | 3216.5 | 21.2 |
| 0°-60° | 5481.5 | 36.1 |
| 0°-90° | 6827.6 | 44.9 |
| 90°-120° | 1782.1 | 11.7 |
| 90°-150° | 6054.2 | 39.8 |
| 90°-180° | 8373.0 | 55.1 |
| 0°-180° | 15200.9 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2680 | 2680 | 2680 | 2680 | 2680 | |
| 5° | 2680 | 2670 | 2642 | 2662 | 2657 | 254 |
| 15° | 2551 | 2536 | 2502 | 2513 | 2500 | 719 |
| 25° | 2309 | 2289 | 2245 | 2250 | 2245 | 1063 |
| 35° | 1992 | 1966 | 1925 | 1910 | 1897 | 1244 |
| 45° | 1621 | 1603 | 1564 | 1536 | 1526 | 1251 |
| 55° | 1227 | 1211 | 1180 | 1150 | 1137 | 1097 |
| 65° | 827 | 812 | 786 | 763 | 750 | 818 |
| 75° | 433 | 428 | 415 | 400 | 405 | 462 |
| 85° | 106 | 103 | 101 | 93 | 90 | 118 |
| 90° | 3 | 32 | 88 | 83 | 86 | 15 |
| 95° | 132 | 157 | 162 | 162 | 157 | 147 |
| 105° | 544 | 551 | 556 | 561 | 561 | 574 |
| 115° | 1011 | 1026 | 1021 | 1019 | 1011 | 1000 |
| 125° | 1471 | 1494 | 1486 | 1478 | 1476 | 1315 |
| 135° | 1903 | 1931 | 1936 | 1933 | 1926 | 1471 |
| 145° | 2310 | 2328 | 2342 | 2345 | 2335 | 1443 |
| 155° | 2641 | 2648 | 2657 | 2669 | 2661 | 1216 |
| 165° | 2873 | 2871 | 2871 | 2889 | 2876 | 811 |
| 175° | 2990 | 2983 | 2977 | 2995 | 2980 | 284 |
| 180° | 2995 | 2995 | 2995 | 2995 | 2995 | |



TEST NUMBER: P919684

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US935-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2680.1 | 2680.1 | 2680.1 | 2680.1 | 2680.1 |
| 2.5° | 2695.7 | 2682.9 | 2654.5 | 2680.1 | 2675.2 |
| 5° | 2680.1 | 2670.0 | 2641.6 | 2662.1 | 2657.2 |
| 7.5° | 2662.1 | 2646.8 | 2618.4 | 2639.1 | 2634.0 |
| 10° | 2634.0 | 2615.9 | 2585.0 | 2605.5 | 2597.9 |
| 12.5° | 2595.1 | 2579.8 | 2548.9 | 2561.7 | 2556.6 |
| 15° | 2551.4 | 2536.1 | 2502.4 | 2512.8 | 2500.0 |
| 17.5° | 2497.2 | 2481.9 | 2448.2 | 2461.2 | 2448.2 |
| 20° | 2437.9 | 2422.6 | 2386.5 | 2394.2 | 2384.0 |
| 22.5° | 2378.9 | 2355.6 | 2321.9 | 2321.9 | 2316.8 |
| 25° | 2309.1 | 2288.6 | 2244.9 | 2249.8 | 2244.9 |
| 27.5° | 2231.7 | 2213.7 | 2180.3 | 2172.6 | 2159.8 |
| 30° | 2154.6 | 2133.8 | 2095.3 | 2087.7 | 2077.2 |
| 32.5° | 2072.1 | 2056.8 | 2015.4 | 1999.8 | 1989.5 |
| 35° | 1992.2 | 1966.5 | 1925.2 | 1909.6 | 1896.8 |
| 37.5° | 1901.9 | 1878.7 | 1837.5 | 1819.4 | 1806.5 |
| 40° | 1809.3 | 1788.5 | 1747.2 | 1724.2 | 1713.8 |
| 42.5° | 1719.1 | 1698.2 | 1657.2 | 1631.2 | 1616.0 |
| 45° | 1621.2 | 1603.1 | 1564.3 | 1536.1 | 1525.8 |
| 47.5° | 1525.8 | 1507.7 | 1466.4 | 1438.0 | 1422.6 |
| 50° | 1425.1 | 1412.3 | 1376.1 | 1340.1 | 1327.2 |
| 52.5° | 1327.2 | 1309.1 | 1275.8 | 1247.4 | 1229.3 |
| 55° | 1226.8 | 1211.3 | 1180.4 | 1149.5 | 1136.6 |
| 57.5° | 1126.3 | 1113.4 | 1079.8 | 1048.9 | 1038.4 |
| 60° | 1025.6 | 1015.5 | 979.4 | 951.0 | 943.3 |
| 62.5° | 927.7 | 909.7 | 884.0 | 858.3 | 847.9 |
| 65° | 827.4 | 811.8 | 786.1 | 762.8 | 750.0 |
| 67.5° | 724.3 | 711.2 | 688.2 | 670.2 | 659.8 |
| 70° | 628.9 | 618.5 | 595.3 | 577.2 | 567.1 |
| 72.5° | 531.0 | 520.6 | 507.7 | 489.7 | 482.1 |
| 75° | 432.8 | 427.9 | 414.8 | 399.5 | 404.7 |
| 77.5° | 345.3 | 334.9 | 329.8 | 322.1 | 314.4 |
| 80° | 257.9 | 255.1 | 249.9 | 242.3 | 237.0 |
| 82.5° | 175.3 | 175.3 | 172.8 | 162.4 | 162.4 |
| 85° | 105.6 | 103.1 | 100.7 | 92.7 | 90.2 |
| 87.5° | 46.5 | 41.3 | 36.1 | 28.4 | 25.7 |
| 90° | 2.7 | 32.5 | 88.5 | 83.1 | 85.8 |
| 92.5° | 56.0 | 75.9 | 78.5 | 81.3 | 81.3 |
| 95° | 131.8 | 157.1 | 161.6 | 161.6 | 157.1 |
| 97.5° | 219.5 | 242.9 | 252.9 | 252.9 | 252.9 |
| 100° | 320.5 | 341.3 | 348.5 | 348.5 | 345.9 |
| 102.5° | 427.1 | 442.5 | 452.5 | 455.1 | 452.5 |
| 105° | 543.6 | 550.9 | 556.3 | 560.8 | 560.8 |
| 107.5° | 659.2 | 670.0 | 670.0 | 671.8 | 659.2 |
| 110° | 771.2 | 785.7 | 785.7 | 785.7 | 778.4 |



TEST NUMBER: P919684

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US935-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 892.2 | 907.5 | 904.8 | 897.6 | 892.2 |
| 115° | 1011.4 | 1025.8 | 1021.3 | 1018.6 | 1011.4 |
| 117.5° | 1129.7 | 1149.5 | 1136.9 | 1129.7 | 1122.5 |
| 120° | 1248.9 | 1268.8 | 1248.9 | 1248.9 | 1240.8 |
| 122.5° | 1357.3 | 1382.5 | 1369.8 | 1362.6 | 1357.3 |
| 125° | 1471.0 | 1493.6 | 1486.3 | 1478.2 | 1475.5 |
| 127.5° | 1582.1 | 1610.1 | 1600.2 | 1589.3 | 1582.1 |
| 130° | 1685.9 | 1718.5 | 1713.9 | 1708.5 | 1698.6 |
| 132.5° | 1802.4 | 1827.7 | 1829.5 | 1816.9 | 1809.6 |
| 135° | 1902.6 | 1930.6 | 1936.0 | 1933.4 | 1926.1 |
| 137.5° | 2014.6 | 2037.2 | 2041.7 | 2039.9 | 2029.1 |
| 140° | 2113.1 | 2135.6 | 2148.3 | 2148.3 | 2138.4 |
| 142.5° | 2214.2 | 2236.8 | 2244.0 | 2246.7 | 2236.8 |
| 145° | 2309.9 | 2328.0 | 2342.4 | 2345.1 | 2335.2 |
| 147.5° | 2395.7 | 2418.3 | 2429.1 | 2433.6 | 2423.7 |
| 150° | 2484.2 | 2499.6 | 2509.5 | 2517.6 | 2509.5 |
| 152.5° | 2562.8 | 2578.1 | 2590.7 | 2600.7 | 2590.7 |
| 155° | 2641.4 | 2648.5 | 2656.7 | 2669.4 | 2661.2 |
| 157.5° | 2709.0 | 2714.5 | 2718.9 | 2737.0 | 2724.4 |
| 160° | 2769.6 | 2775.0 | 2777.7 | 2793.1 | 2782.2 |
| 162.5° | 2825.5 | 2825.5 | 2828.3 | 2845.4 | 2832.8 |
| 165° | 2873.4 | 2870.7 | 2870.7 | 2888.7 | 2876.1 |
| 167.5° | 2916.7 | 2908.6 | 2908.6 | 2926.7 | 2914.0 |
| 170° | 2949.3 | 2942.0 | 2939.4 | 2957.4 | 2942.0 |
| 172.5° | 2971.8 | 2964.6 | 2961.9 | 2980.0 | 2964.6 |
| 175° | 2989.9 | 2982.7 | 2977.2 | 2995.3 | 2980.0 |
| 177.5° | 2999.8 | 2992.6 | 2987.1 | 3002.6 | 2987.1 |
| 180° | 2995.3 | 2995.3 | 2995.3 | 2995.3 | 2995.3 |



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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 | 9.12 | 9.94 | 10.12 | 10.95 | 12.29 | 8.68 | 9.50 | 9.68 | 10.51 | 11.85 |
| | 3H | 10.78 | 11.51 | 11.79 | 12.53 | 13.89 | 10.30 | 11.03 | 11.31 | 12.05 | 13.41 |
| | 4H | 11.37 | 12.06 | 12.39 | 13.08 | 14.45 | 10.88 | 11.57 | 11.90 | 12.60 | 13.97 |
| | 6H | 11.77 | 12.41 | 12.80 | 13.43 | 14.82 | 11.27 | 11.91 | 12.31 | 12.94 | 14.32 |
| | 8H | 11.87 | 12.48 | 12.91 | 13.52 | 14.90 | 11.38 | 11.99 | 12.42 | 13.03 | 14.41 |
| | 12H | 11.92 | 12.50 | 12.96 | 13.54 | 14.94 | 11.42 | 12.00 | 12.46 | 13.04 | 14.44 |
| 4H | 2H | 9.58 | 10.27 | 10.60 | 11.29 | 12.66 | 9.22 | 9.92 | 10.25 | 10.94 | 12.31 |
| | 3H | 11.44 | 12.02 | 12.48 | 13.07 | 14.45 | 11.04 | 11.62 | 12.08 | 12.67 | 14.05 |
| | 4H | 12.16 | 12.69 | 13.20 | 13.73 | 15.14 | 11.74 | 12.27 | 12.78 | 13.31 | 14.72 |
| | 6H | 12.67 | 13.13 | 13.73 | 14.19 | 15.59 | 12.25 | 12.70 | 13.30 | 13.77 | 15.17 |
| | 8H | 12.82 | 13.25 | 13.88 | 14.31 | 15.72 | 12.39 | 12.82 | 13.45 | 13.88 | 15.29 |
| | 12H | 12.89 | 13.28 | 13.97 | 14.35 | 15.77 | 12.45 | 12.84 | 13.53 | 13.91 | 15.33 |
| 8H | 4H | 12.35 | 12.78 | 13.40 | 13.83 | 15.25 | 11.98 | 12.40 | 13.03 | 13.46 | 14.88 |
| | 6H | 12.98 | 13.33 | 14.06 | 14.43 | 15.85 | 12.61 | 12.96 | 13.68 | 14.06 | 15.47 |
| | 8H | 13.20 | 13.51 | 14.29 | 14.60 | 16.03 | 12.82 | 13.13 | 13.91 | 14.21 | 15.65 |
| | 12H | 13.34 | 13.61 | 14.43 | 14.69 | 16.16 | 12.93 | 13.21 | 14.02 | 14.29 | 15.76 |
| 12H | 4H | 12.33 | 12.72 | 13.41 | 13.79 | 15.21 | 11.97 | 12.36 | 13.04 | 13.43 | 14.85 |
| | 6H | 13.01 | 13.32 | 14.10 | 14.41 | 15.84 | 12.65 | 12.96 | 13.73 | 14.04 | 15.47 |
| | 8H | 13.25 | 13.53 | 14.34 | 14.61 | 16.08 | 12.88 | 13.15 | 13.97 | 14.23 | 15.71 |