

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: P912714

Luminaire Tested: DFN2DIP-TR3F0-090D060US850-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912714
REPORT IS A COMBINATION OF REPORTS P900326 AND P897195
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR3F0-090D060US850-RLLFLL
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

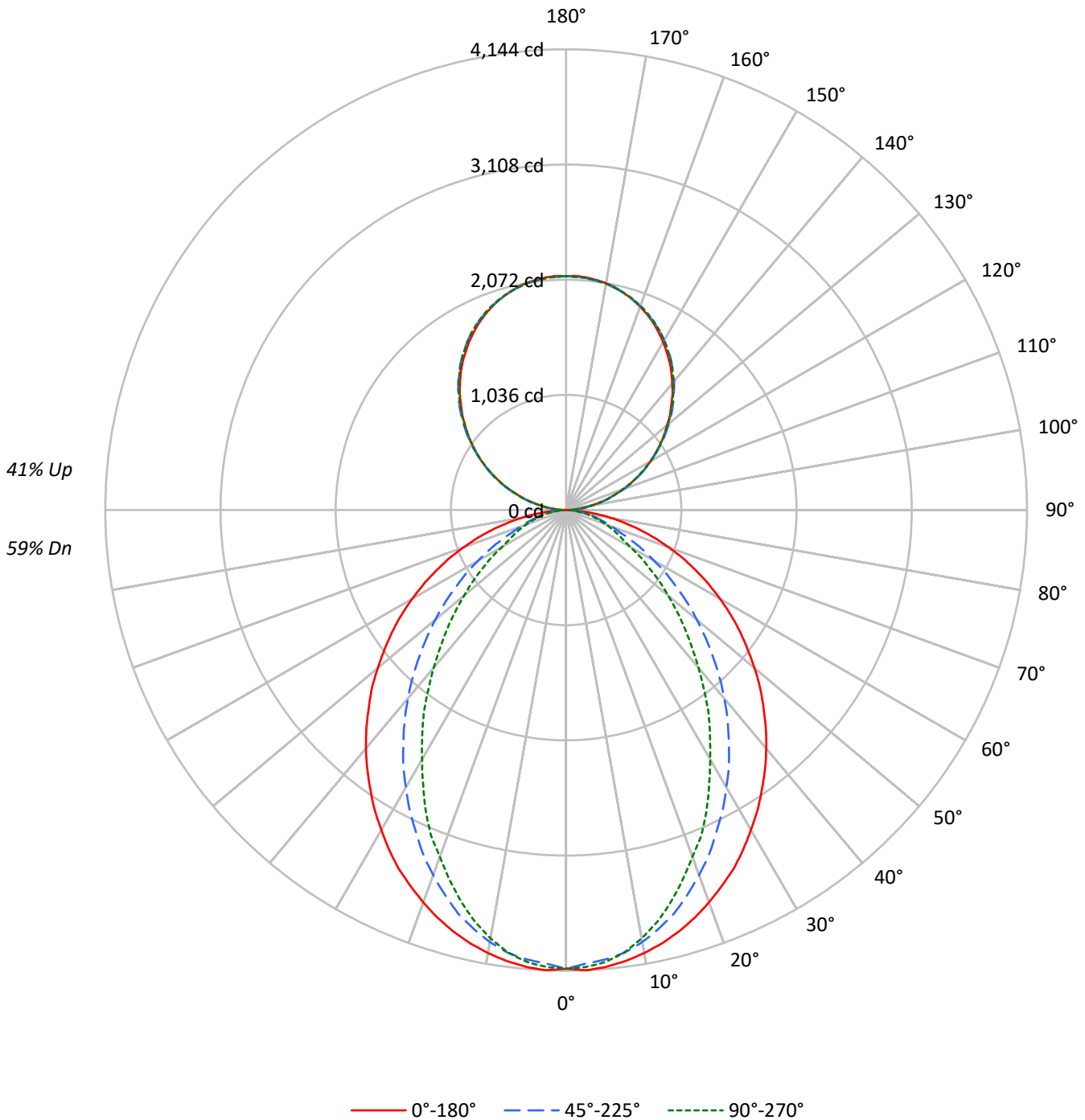
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 14372.7 lumens
Efficiency: N/A
Efficacy: 102.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 140
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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: P912714

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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 | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 | 59 | | | |
| 1 | 100 | 96 | 92 | 89 | 94 | 90 | 87 | 84 | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 56 | 51 | | | |
| 2 | 92 | 85 | 79 | 74 | 86 | 79 | 74 | 70 | 69 | 65 | 62 | 60 | 57 | 55 | 52 | 50 | 48 | 44 | | | |
| 3 | 84 | 75 | 68 | 62 | 78 | 70 | 64 | 59 | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 44 | 41 | 38 | | | |
| 4 | 77 | 67 | 59 | 53 | 72 | 63 | 56 | 51 | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 | 33 | | | |
| 5 | 71 | 60 | 52 | 46 | 66 | 56 | 49 | 44 | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 | 29 | | | |
| 6 | 66 | 54 | 46 | 40 | 61 | 51 | 44 | 39 | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 | 26 | | | |
| 7 | 61 | 49 | 41 | 36 | 57 | 46 | 39 | 34 | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 | 23 | | | |
| 8 | 57 | 45 | 37 | 32 | 53 | 42 | 35 | 30 | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 | 21 | | | |
| 9 | 53 | 41 | 34 | 29 | 50 | 39 | 32 | 27 | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 24 | 21 | 19 | | | |
| 10 | 50 | 38 | 31 | 26 | 47 | 36 | 29 | 25 | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 | 17 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 5140 | 5140 | 5140 |
| 5° | 5146 | 5054 | 5088 |
| 10° | 5092 | 4951 | 4919 |
| 15° | 5019 | 4783 | 4660 |
| 20° | 4923 | 4553 | 4343 |
| 25° | 4826 | 4297 | 4037 |
| 30° | 4695 | 4034 | 3651 |
| 35° | 4567 | 3752 | 3311 |
| 40° | 4437 | 3461 | 2922 |
| 45° | 4285 | 3138 | 2570 |
| 50° | 4129 | 2813 | 2226 |
| 55° | 3965 | 2466 | 1896 |
| 60° | 3775 | 2104 | 1558 |
| 65° | 3556 | 1736 | 1398 |
| 70° | 3291 | 1393 | 1260 |
| 75° | 2957 | 1219 | 1139 |
| 80° | 2475 | 1009 | 977 |
| 85° | 1684 | 653 | 715 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4285 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 386.6 | 2.7 |
| 10°-20° | 1061.3 | 7.4 |
| 20°-30° | 1490.1 | 10.4 |
| 30°-40° | 1624.3 | 11.3 |
| 40°-50° | 1492.9 | 10.4 |
| 50°-60° | 1172.4 | 8.2 |
| 60°-70° | 763.1 | 5.3 |
| 70°-80° | 392.8 | 2.7 |
| 80°-90° | 106.3 | 0.7 |
| 90°-100° | 130.2 | 0.9 |
| 100°-110° | 413.7 | 2.9 |
| 110°-120° | 708.0 | 4.9 |
| 120°-130° | 931.2 | 6.5 |
| 130°-140° | 1045.3 | 7.3 |
| 140°-150° | 1025.0 | 7.1 |
| 150°-160° | 859.8 | 6.0 |
| 160°-170° | 570.2 | 4.0 |
| 170°-180° | 199.3 | 1.4 |
| 0°-30° | 2938.0 | 20.4 |
| 0°-40° | 4562.3 | 31.7 |
| 0°-60° | 7227.6 | 50.3 |
| 0°-90° | 8489.9 | 59.1 |
| 90°-120° | 1252.0 | 8.7 |
| 90°-150° | 4253.5 | 29.6 |
| 90°-180° | 5883.0 | 40.9 |
| 0°-180° | 14372.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4125 | 4125 | 4125 | 4125 | 4125 | |
| 5° | 4125 | 4106 | 4058 | 4091 | 4080 | 391 |
| 15° | 3924 | 3882 | 3756 | 3685 | 3648 | 1106 |
| 25° | 3562 | 3442 | 3196 | 3043 | 2986 | 1638 |
| 35° | 3069 | 2878 | 2550 | 2315 | 2232 | 1921 |
| 45° | 2509 | 2258 | 1867 | 1601 | 1512 | 1937 |
| 55° | 1908 | 1616 | 1213 | 989 | 918 | 1705 |
| 65° | 1288 | 986 | 650 | 523 | 511 | 1277 |
| 75° | 687 | 425 | 299 | 272 | 269 | 726 |
| 85° | 160 | 82 | 71 | 71 | 71 | 184 |
| 90° | 2 | 23 | 62 | 58 | 60 | 14 |
| 95° | 93 | 110 | 114 | 114 | 110 | 103 |
| 105° | 382 | 387 | 391 | 394 | 394 | 403 |
| 115° | 710 | 721 | 718 | 716 | 710 | 703 |
| 125° | 1034 | 1049 | 1044 | 1039 | 1037 | 924 |
| 135° | 1337 | 1356 | 1360 | 1358 | 1353 | 1033 |
| 145° | 1623 | 1636 | 1646 | 1648 | 1641 | 1014 |
| 155° | 1856 | 1861 | 1866 | 1875 | 1870 | 854 |
| 165° | 2019 | 2017 | 2017 | 2030 | 2021 | 569 |
| 175° | 2101 | 2096 | 2092 | 2104 | 2094 | 200 |
| 180° | 2104 | 2104 | 2104 | 2104 | 2104 | |



TEST NUMBER: P912714

CATALOG NUMBER: DFN2DIP-TR3F0-090D060US850-RLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4125.1 | 4125.1 | 4125.1 | 4125.1 | 4125.1 |
| 2.5° | 4143.8 | 4125.1 | 4083.9 | 4121.6 | 4114.1 |
| 5° | 4125.1 | 4106.5 | 4057.8 | 4091.4 | 4080.3 |
| 7.5° | 4091.4 | 4069.3 | 4017.0 | 4031.7 | 4013.0 |
| 10° | 4046.7 | 4020.6 | 3946.2 | 3934.6 | 3912.4 |
| 12.5° | 3990.8 | 3957.2 | 3856.2 | 3834.0 | 3792.8 |
| 15° | 3923.5 | 3882.4 | 3755.6 | 3684.7 | 3647.5 |
| 17.5° | 3845.1 | 3785.3 | 3628.4 | 3546.5 | 3486.7 |
| 20° | 3755.6 | 3680.8 | 3494.1 | 3401.1 | 3318.7 |
| 22.5° | 3658.6 | 3572.6 | 3355.9 | 3229.2 | 3173.4 |
| 25° | 3561.6 | 3441.9 | 3195.6 | 3042.7 | 2986.4 |
| 27.5° | 3445.9 | 3318.7 | 3046.2 | 2870.8 | 2784.8 |
| 30° | 3322.7 | 3180.5 | 2881.8 | 2691.8 | 2590.7 |
| 32.5° | 3203.0 | 3031.1 | 2725.4 | 2501.2 | 2407.7 |
| 35° | 3068.8 | 2878.3 | 2549.9 | 2314.7 | 2232.3 |
| 37.5° | 2938.1 | 2732.6 | 2385.6 | 2127.7 | 2034.7 |
| 40° | 2799.9 | 2576.1 | 2213.7 | 1948.7 | 1851.7 |
| 42.5° | 2658.1 | 2419.3 | 2042.1 | 1765.7 | 1672.6 |
| 45° | 2508.8 | 2258.5 | 1866.7 | 1601.3 | 1511.8 |
| 47.5° | 2366.9 | 2102.0 | 1698.8 | 1433.4 | 1351.4 |
| 50° | 2210.1 | 1945.1 | 1534.4 | 1276.6 | 1198.5 |
| 52.5° | 2056.9 | 1776.8 | 1377.6 | 1131.2 | 1060.3 |
| 55° | 1907.5 | 1616.4 | 1213.1 | 989.4 | 918.5 |
| 57.5° | 1754.7 | 1456.0 | 1067.9 | 858.7 | 798.9 |
| 60° | 1597.7 | 1299.1 | 914.6 | 724.4 | 664.6 |
| 62.5° | 1444.9 | 1146.3 | 783.8 | 604.8 | 575.1 |
| 65° | 1288.0 | 985.5 | 649.5 | 522.8 | 511.4 |
| 67.5° | 1138.7 | 836.1 | 522.8 | 459.0 | 447.9 |
| 70° | 981.9 | 690.8 | 433.0 | 395.7 | 380.6 |
| 72.5° | 832.5 | 556.1 | 362.0 | 332.3 | 324.8 |
| 75° | 686.8 | 425.4 | 298.7 | 272.5 | 268.9 |
| 77.5° | 541.4 | 302.2 | 235.2 | 220.2 | 212.7 |
| 80° | 406.8 | 216.7 | 179.0 | 164.4 | 164.4 |
| 82.5° | 283.6 | 145.7 | 123.2 | 115.7 | 115.7 |
| 85° | 160.4 | 82.0 | 70.9 | 70.9 | 70.9 |
| 87.5° | 59.8 | 29.7 | 29.7 | 26.2 | 26.2 |
| 90° | 1.9 | 22.8 | 62.2 | 58.3 | 60.2 |
| 92.5° | 39.4 | 53.3 | 55.2 | 57.1 | 57.1 |
| 95° | 92.6 | 110.3 | 113.6 | 113.6 | 110.3 |
| 97.5° | 154.2 | 170.7 | 177.7 | 177.7 | 177.7 |
| 100° | 225.2 | 239.8 | 244.9 | 244.9 | 243.0 |
| 102.5° | 300.1 | 310.9 | 317.8 | 319.7 | 317.8 |
| 105° | 381.9 | 387.0 | 390.8 | 394.0 | 394.0 |
| 107.5° | 463.1 | 470.8 | 470.8 | 472.0 | 463.1 |
| 110° | 541.9 | 551.9 | 551.9 | 551.9 | 546.8 |



TEST NUMBER: P912714

CATALOG NUMBER: DFN2DIP-TR3F0-090D060US850-RLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 626.8 | 637.6 | 635.7 | 630.6 | 626.8 |
| 115° | 710.5 | 720.7 | 717.5 | 715.6 | 710.5 |
| 117.5° | 793.7 | 807.7 | 798.7 | 793.7 | 788.6 |
| 120° | 877.4 | 891.4 | 877.4 | 877.4 | 871.7 |
| 122.5° | 953.5 | 971.3 | 962.4 | 957.4 | 953.5 |
| 125° | 1033.5 | 1049.3 | 1044.2 | 1038.6 | 1036.7 |
| 127.5° | 1111.6 | 1131.2 | 1124.2 | 1116.7 | 1111.6 |
| 130° | 1184.5 | 1207.4 | 1204.2 | 1200.4 | 1193.4 |
| 132.5° | 1266.4 | 1284.1 | 1285.3 | 1276.5 | 1271.4 |
| 135° | 1336.8 | 1356.4 | 1360.2 | 1358.3 | 1353.2 |
| 137.5° | 1415.4 | 1431.3 | 1434.5 | 1433.2 | 1425.6 |
| 140° | 1484.6 | 1500.5 | 1509.3 | 1509.3 | 1502.4 |
| 142.5° | 1555.6 | 1571.5 | 1576.6 | 1578.4 | 1571.5 |
| 145° | 1622.9 | 1635.6 | 1645.8 | 1647.6 | 1640.7 |
| 147.5° | 1683.1 | 1699.0 | 1706.6 | 1709.7 | 1702.8 |
| 150° | 1745.3 | 1756.1 | 1763.1 | 1768.7 | 1763.1 |
| 152.5° | 1800.5 | 1811.3 | 1820.2 | 1827.2 | 1820.2 |
| 155° | 1855.7 | 1860.8 | 1866.4 | 1875.4 | 1869.7 |
| 157.5° | 1903.3 | 1907.1 | 1910.3 | 1923.0 | 1914.1 |
| 160° | 1945.9 | 1949.6 | 1951.5 | 1962.3 | 1954.7 |
| 162.5° | 1985.1 | 1985.1 | 1987.0 | 1999.1 | 1990.2 |
| 165° | 2018.7 | 2016.8 | 2016.8 | 2029.6 | 2020.7 |
| 167.5° | 2049.2 | 2043.6 | 2043.6 | 2056.2 | 2047.3 |
| 170° | 2072.1 | 2067.0 | 2065.1 | 2077.7 | 2067.0 |
| 172.5° | 2087.9 | 2082.8 | 2080.9 | 2093.6 | 2082.8 |
| 175° | 2100.6 | 2095.6 | 2091.7 | 2104.4 | 2093.6 |
| 177.5° | 2107.5 | 2102.6 | 2098.7 | 2109.4 | 2098.7 |
| 180° | 2104.4 | 2104.4 | 2104.4 | 2104.4 | 2104.4 |



TEST NUMBER: P912714
 CATALOG NUMBER: DFN2DIP-TR3F0-090D060US850-RLFL

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 | 13.59 | 14.50 | 14.47 | 15.40 | 16.54 | 9.57 | 10.48 | 10.45 | 11.37 | 12.51 |
| | 3H | 15.26 | 16.08 | 16.16 | 16.99 | 18.15 | 10.76 | 11.57 | 11.65 | 12.48 | 13.64 |
| | 4H | 15.87 | 16.64 | 16.78 | 17.55 | 18.73 | 11.21 | 11.97 | 12.12 | 12.89 | 14.06 |
| | 6H | 16.29 | 16.99 | 17.21 | 17.91 | 19.10 | 11.53 | 12.23 | 12.45 | 13.15 | 14.34 |
| | 8H | 16.41 | 17.08 | 17.34 | 18.02 | 19.21 | 11.62 | 12.29 | 12.55 | 13.23 | 14.41 |
| | 12H | 16.47 | 17.11 | 17.41 | 18.04 | 19.25 | 11.66 | 12.30 | 12.59 | 13.23 | 14.44 |
| 4H | 2H | 13.62 | 14.38 | 14.53 | 15.30 | 16.47 | 10.17 | 10.93 | 11.08 | 11.85 | 13.02 |
| | 3H | 15.44 | 16.08 | 16.37 | 17.02 | 18.21 | 11.52 | 12.15 | 12.44 | 13.10 | 14.29 |
| | 4H | 16.13 | 16.71 | 17.07 | 17.65 | 18.86 | 12.06 | 12.64 | 13.00 | 13.58 | 14.80 |
| | 6H | 16.64 | 17.14 | 17.59 | 18.10 | 19.32 | 12.48 | 12.98 | 13.43 | 13.94 | 15.16 |
| | 8H | 16.81 | 17.28 | 17.76 | 18.24 | 19.46 | 12.61 | 13.08 | 13.56 | 14.03 | 15.26 |
| | 12H | 16.91 | 17.33 | 17.88 | 18.30 | 19.53 | 12.67 | 13.09 | 13.64 | 14.07 | 15.30 |
| 8H | 4H | 16.10 | 16.57 | 17.05 | 17.53 | 18.75 | 12.34 | 12.81 | 13.30 | 13.77 | 15.00 |
| | 6H | 16.66 | 17.05 | 17.64 | 18.05 | 19.27 | 12.86 | 13.24 | 13.83 | 14.24 | 15.47 |
| | 8H | 16.87 | 17.21 | 17.86 | 18.20 | 19.45 | 13.04 | 13.38 | 14.03 | 14.37 | 15.62 |
| | 12H | 17.01 | 17.31 | 18.00 | 18.29 | 19.58 | 13.16 | 13.46 | 14.15 | 14.44 | 15.74 |
| 12H | 4H | 16.06 | 16.48 | 17.03 | 17.45 | 18.69 | 12.35 | 12.77 | 13.32 | 13.75 | 14.98 |
| | 6H | 16.64 | 16.98 | 17.62 | 17.97 | 19.21 | 12.90 | 13.25 | 13.89 | 14.23 | 15.48 |
| | 8H | 16.85 | 17.15 | 17.84 | 18.13 | 19.43 | 13.11 | 13.41 | 14.10 | 14.39 | 15.69 |