

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: P927101

Luminaire Tested: DFN2DIP-HX4F0-100D070US830-RLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927101
REPORT IS A COMBINATION OF REPORTS P899366 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D070US830-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

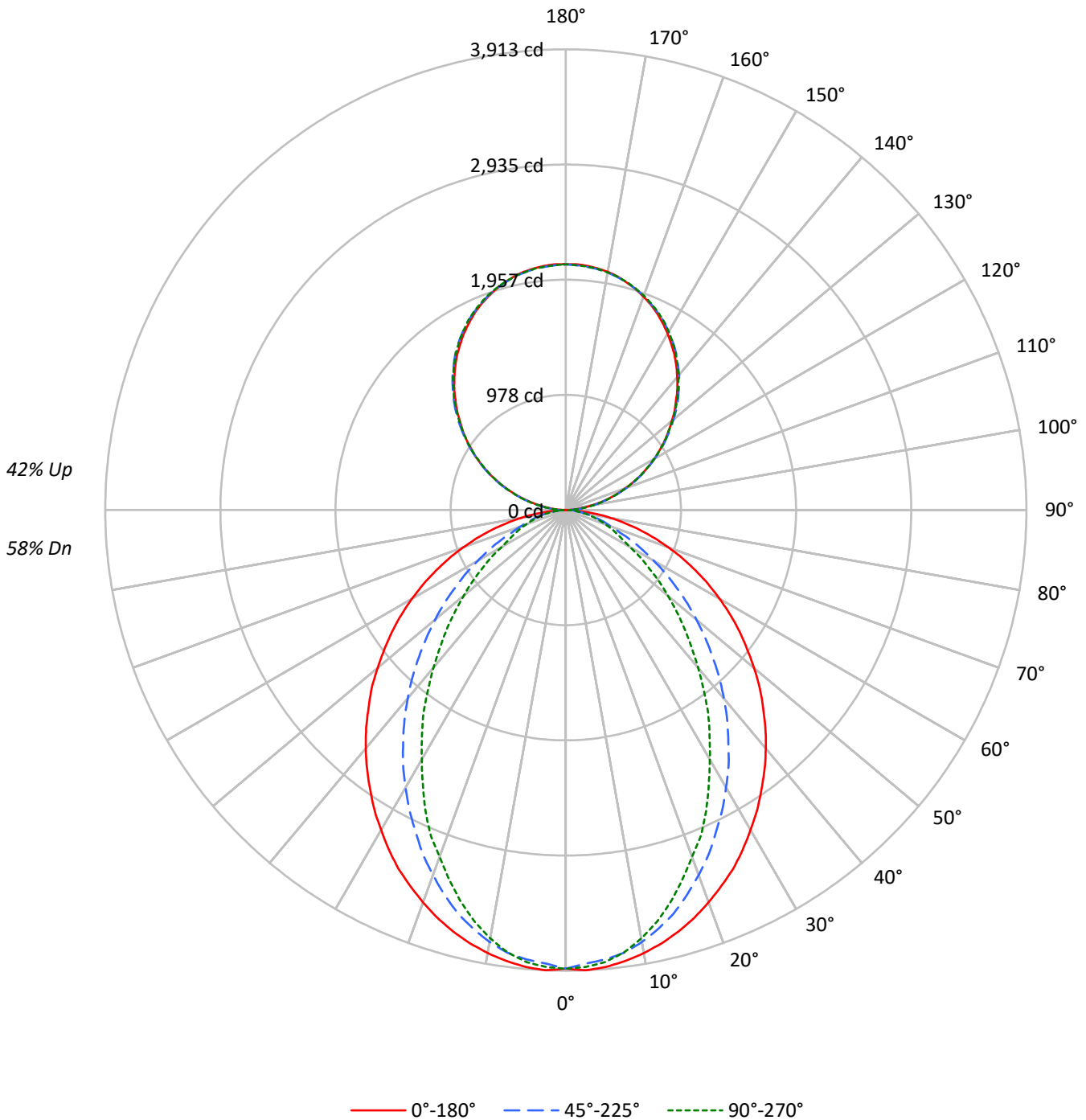
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13850.0 lumens
Efficiency: N/A
Efficacy: 90.9 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): 152.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P927101
CATALOG NUMBER: DFN2DIP-HX4F0-100D070US830-RLLFLL

Luminous Intensity Polar Plot





TEST NUMBER: P927101

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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 | 75 | 75 | 75 | 63 | 63 | 63 | 58 | | | 58 |
| 1 | 100 | 96 | 92 | 89 | 93 | 90 | 86 | 83 | 78 | 75 | 73 | 67 | 65 | 64 | 57 | 56 | 55 | 50 | | | 50 |
| 2 | 92 | 84 | 79 | 74 | 85 | 79 | 74 | 69 | 69 | 65 | 62 | 59 | 57 | 54 | 51 | 49 | 47 | 43 | | | 43 |
| 3 | 84 | 75 | 68 | 62 | 78 | 70 | 64 | 59 | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 43 | 41 | 37 | | | 37 |
| 4 | 77 | 67 | 59 | 53 | 72 | 62 | 56 | 50 | 55 | 49 | 45 | 48 | 44 | 40 | 41 | 38 | 35 | 32 | | | 32 |
| 5 | 71 | 60 | 52 | 46 | 66 | 56 | 49 | 44 | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 | 28 | | | 28 |
| 6 | 66 | 54 | 46 | 40 | 61 | 51 | 43 | 38 | 45 | 39 | 35 | 39 | 35 | 31 | 34 | 31 | 28 | 25 | | | 25 |
| 7 | 61 | 49 | 41 | 35 | 57 | 46 | 39 | 34 | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 28 | 25 | 22 | | | 22 |
| 8 | 57 | 44 | 37 | 32 | 53 | 42 | 35 | 30 | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 23 | 20 | | | 20 |
| 9 | 53 | 41 | 33 | 28 | 49 | 39 | 32 | 27 | 34 | 29 | 25 | 30 | 26 | 23 | 27 | 23 | 20 | 18 | | | 18 |
| 10 | 49 | 38 | 30 | 26 | 46 | 36 | 29 | 25 | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 | 17 | | | 17 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2896 | 2896 | 2896 |
| 5° | 2901 | 2851 | 2869 |
| 10° | 2873 | 2795 | 2776 |
| 15° | 2834 | 2703 | 2631 |
| 20° | 2781 | 2576 | 2454 |
| 25° | 2728 | 2433 | 2284 |
| 30° | 2656 | 2287 | 2067 |
| 35° | 2586 | 2130 | 1876 |
| 40° | 2515 | 1968 | 1658 |
| 45° | 2432 | 1787 | 1460 |
| 50° | 2346 | 1605 | 1267 |
| 55° | 2256 | 1410 | 1081 |
| 60° | 2153 | 1206 | 890 |
| 65° | 2033 | 999 | 801 |
| 70° | 1889 | 806 | 725 |
| 75° | 1707 | 711 | 660 |
| 80° | 1444 | 598 | 573 |
| 85° | 1010 | 400 | 431 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2432 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 365.1 | 2.6 |
| 10°-20° | 1002.2 | 7.2 |
| 20°-30° | 1407.1 | 10.2 |
| 30°-40° | 1533.8 | 11.1 |
| 40°-50° | 1409.7 | 10.2 |
| 50°-60° | 1107.1 | 8.0 |
| 60°-70° | 720.6 | 5.2 |
| 70°-80° | 370.9 | 2.7 |
| 80°-90° | 100.6 | 0.7 |
| 90°-100° | 129.1 | 0.9 |
| 100°-110° | 410.2 | 3.0 |
| 110°-120° | 702.0 | 5.1 |
| 120°-130° | 923.3 | 6.7 |
| 130°-140° | 1036.4 | 7.5 |
| 140°-150° | 1016.3 | 7.3 |
| 150°-160° | 852.5 | 6.2 |
| 160°-170° | 565.4 | 4.1 |
| 170°-180° | 197.6 | 1.4 |
| 0°-30° | 2774.3 | 20.0 |
| 0°-40° | 4308.1 | 31.1 |
| 0°-60° | 6825.0 | 49.3 |
| 0°-90° | 8017.1 | 57.9 |
| 90°-120° | 1241.4 | 9.0 |
| 90°-150° | 4217.4 | 30.5 |
| 90°-180° | 5833.0 | 42.1 |
| 0°-180° | 13850.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3895 | 3895 | 3895 | 3895 | 3895 | |
| 5° | 3895 | 3878 | 3832 | 3864 | 3853 | 369 |
| 15° | 3705 | 3666 | 3546 | 3479 | 3444 | 1044 |
| 25° | 3363 | 3250 | 3018 | 2873 | 2820 | 1547 |
| 35° | 2898 | 2718 | 2408 | 2186 | 2108 | 1814 |
| 45° | 2369 | 2133 | 1763 | 1512 | 1428 | 1829 |
| 55° | 1801 | 1526 | 1146 | 934 | 867 | 1610 |
| 65° | 1216 | 930 | 613 | 494 | 483 | 1206 |
| 75° | 648 | 402 | 282 | 257 | 254 | 686 |
| 85° | 152 | 77 | 67 | 67 | 67 | 174 |
| 90° | 2 | 23 | 62 | 58 | 60 | 14 |
| 95° | 92 | 109 | 113 | 113 | 109 | 102 |
| 105° | 379 | 384 | 388 | 391 | 391 | 400 |
| 115° | 704 | 715 | 712 | 710 | 704 | 697 |
| 125° | 1025 | 1040 | 1035 | 1030 | 1028 | 916 |
| 135° | 1325 | 1345 | 1349 | 1347 | 1342 | 1024 |
| 145° | 1609 | 1622 | 1632 | 1634 | 1627 | 1005 |
| 155° | 1840 | 1845 | 1851 | 1860 | 1854 | 847 |
| 165° | 2002 | 2000 | 2000 | 2012 | 2004 | 565 |
| 175° | 2083 | 2078 | 2074 | 2086 | 2076 | 198 |
| 180° | 2086 | 2086 | 2086 | 2086 | 2086 | |



TEST NUMBER: P927101

CATALOG NUMBER: DFN2DIP-HX4F0-100D070US830-RLFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3895.4 | 3895.4 | 3895.4 | 3895.4 | 3895.4 |
| 2.5° | 3912.9 | 3895.4 | 3856.4 | 3892.0 | 3884.9 |
| 5° | 3895.4 | 3877.7 | 3831.7 | 3863.6 | 3853.0 |
| 7.5° | 3863.6 | 3842.6 | 3793.2 | 3807.0 | 3789.5 |
| 10° | 3821.3 | 3796.6 | 3726.3 | 3715.4 | 3694.5 |
| 12.5° | 3768.6 | 3736.7 | 3641.3 | 3620.4 | 3581.5 |
| 15° | 3705.0 | 3666.0 | 3546.3 | 3479.4 | 3444.3 |
| 17.5° | 3630.9 | 3574.4 | 3426.4 | 3348.9 | 3292.4 |
| 20° | 3546.3 | 3475.7 | 3299.5 | 3211.7 | 3133.8 |
| 22.5° | 3454.7 | 3373.6 | 3169.0 | 3049.4 | 2996.6 |
| 25° | 3363.1 | 3250.2 | 3017.5 | 2873.1 | 2820.1 |
| 27.5° | 3253.9 | 3133.8 | 2876.5 | 2710.8 | 2629.7 |
| 30° | 3137.6 | 3003.3 | 2721.3 | 2541.8 | 2446.4 |
| 32.5° | 3024.7 | 2862.3 | 2573.6 | 2361.9 | 2273.6 |
| 35° | 2897.8 | 2718.0 | 2407.9 | 2185.8 | 2107.9 |
| 37.5° | 2774.4 | 2580.3 | 2252.7 | 2009.2 | 1921.3 |
| 40° | 2643.9 | 2432.6 | 2090.4 | 1840.1 | 1748.5 |
| 42.5° | 2510.0 | 2284.4 | 1928.4 | 1667.4 | 1579.4 |
| 45° | 2369.0 | 2132.6 | 1762.8 | 1512.1 | 1427.6 |
| 47.5° | 2235.1 | 1984.9 | 1604.1 | 1353.5 | 1276.1 |
| 50° | 2087.0 | 1836.7 | 1448.9 | 1205.5 | 1131.8 |
| 52.5° | 1942.2 | 1677.8 | 1300.8 | 1068.1 | 1001.2 |
| 55° | 1801.2 | 1526.4 | 1145.6 | 934.3 | 867.3 |
| 57.5° | 1656.9 | 1374.8 | 1008.4 | 810.8 | 754.4 |
| 60° | 1508.8 | 1226.8 | 863.6 | 684.1 | 627.6 |
| 62.5° | 1364.4 | 1082.4 | 740.1 | 571.2 | 543.1 |
| 65° | 1216.3 | 930.5 | 613.4 | 493.7 | 482.8 |
| 67.5° | 1075.3 | 789.5 | 493.7 | 433.5 | 423.0 |
| 70° | 927.1 | 652.3 | 408.8 | 373.6 | 359.5 |
| 72.5° | 786.1 | 525.1 | 341.8 | 313.8 | 306.7 |
| 75° | 648.5 | 401.7 | 282.0 | 257.3 | 253.9 |
| 77.5° | 511.3 | 285.4 | 222.1 | 207.9 | 200.8 |
| 80° | 384.1 | 204.6 | 169.1 | 155.2 | 155.2 |
| 82.5° | 267.8 | 137.6 | 116.3 | 109.2 | 109.2 |
| 85° | 151.5 | 77.4 | 66.9 | 66.9 | 66.9 |
| 87.5° | 56.5 | 28.1 | 28.1 | 24.7 | 24.7 |
| 90° | 1.9 | 22.6 | 61.6 | 57.9 | 59.8 |
| 92.5° | 39.0 | 52.9 | 54.8 | 56.6 | 56.6 |
| 95° | 91.8 | 109.4 | 112.6 | 112.6 | 109.4 |
| 97.5° | 152.9 | 169.2 | 176.2 | 176.2 | 176.2 |
| 100° | 223.3 | 237.8 | 242.8 | 242.8 | 240.9 |
| 102.5° | 297.5 | 308.2 | 315.2 | 317.1 | 315.2 |
| 105° | 378.7 | 383.7 | 387.5 | 390.7 | 390.7 |
| 107.5° | 459.2 | 466.7 | 466.7 | 468.0 | 459.2 |
| 110° | 537.2 | 547.3 | 547.3 | 547.3 | 542.2 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 621.5 | 632.2 | 630.3 | 625.3 | 621.5 |
| 115° | 704.5 | 714.6 | 711.5 | 709.6 | 704.5 |
| 117.5° | 786.9 | 800.7 | 792.0 | 786.9 | 781.9 |
| 120° | 869.9 | 883.8 | 869.9 | 869.9 | 864.3 |
| 122.5° | 945.4 | 963.0 | 954.3 | 949.2 | 945.4 |
| 125° | 1024.7 | 1040.4 | 1035.4 | 1029.8 | 1027.9 |
| 127.5° | 1102.1 | 1121.6 | 1114.7 | 1107.2 | 1102.1 |
| 130° | 1174.4 | 1197.1 | 1194.0 | 1190.2 | 1183.2 |
| 132.5° | 1255.6 | 1273.2 | 1274.4 | 1265.7 | 1260.6 |
| 135° | 1325.4 | 1344.9 | 1348.7 | 1346.7 | 1341.7 |
| 137.5° | 1403.4 | 1419.1 | 1422.2 | 1421.0 | 1413.5 |
| 140° | 1472.0 | 1487.7 | 1496.5 | 1496.5 | 1489.6 |
| 142.5° | 1542.4 | 1558.1 | 1563.1 | 1565.0 | 1558.1 |
| 145° | 1609.1 | 1621.7 | 1631.8 | 1633.6 | 1626.8 |
| 147.5° | 1668.9 | 1684.6 | 1692.2 | 1695.3 | 1688.4 |
| 150° | 1730.5 | 1741.2 | 1748.1 | 1753.8 | 1748.1 |
| 152.5° | 1785.2 | 1795.9 | 1804.7 | 1811.7 | 1804.7 |
| 155° | 1839.9 | 1844.9 | 1850.7 | 1859.5 | 1853.8 |
| 157.5° | 1887.2 | 1890.9 | 1894.0 | 1906.7 | 1897.8 |
| 160° | 1929.3 | 1933.1 | 1935.0 | 1945.6 | 1938.1 |
| 162.5° | 1968.3 | 1968.3 | 1970.2 | 1982.1 | 1973.3 |
| 165° | 2001.6 | 1999.7 | 1999.7 | 2012.3 | 2003.5 |
| 167.5° | 2031.8 | 2026.2 | 2026.2 | 2038.7 | 2030.0 |
| 170° | 2054.5 | 2049.5 | 2047.6 | 2060.1 | 2049.5 |
| 172.5° | 2070.2 | 2065.1 | 2063.2 | 2075.9 | 2065.1 |
| 175° | 2082.7 | 2077.7 | 2074.0 | 2086.5 | 2075.9 |
| 177.5° | 2089.7 | 2084.6 | 2080.9 | 2091.6 | 2080.9 |
| 180° | 2086.5 | 2086.5 | 2086.5 | 2086.5 | 2086.5 |



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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 | 11.55 | 12.45 | 12.44 | 13.36 | 14.51 | 7.52 | 8.42 | 8.41 | 9.33 | 10.49 |
| | 3H | 13.23 | 14.04 | 14.14 | 14.95 | 16.14 | 8.72 | 9.52 | 9.62 | 10.44 | 11.62 |
| | 4H | 13.84 | 14.60 | 14.76 | 15.53 | 16.72 | 9.17 | 9.93 | 10.09 | 10.85 | 12.05 |
| | 6H | 14.27 | 14.97 | 15.20 | 15.90 | 17.10 | 9.50 | 10.20 | 10.43 | 11.13 | 12.33 |
| | 8H | 14.40 | 15.06 | 15.34 | 16.01 | 17.21 | 9.59 | 10.26 | 10.53 | 11.20 | 12.40 |
| | 12H | 14.46 | 15.10 | 15.41 | 16.04 | 17.26 | 9.64 | 10.27 | 10.58 | 11.21 | 12.44 |
| 4H | 2H | 11.57 | 12.33 | 12.50 | 13.26 | 14.45 | 8.13 | 8.88 | 9.05 | 9.81 | 11.00 |
| | 3H | 13.41 | 14.04 | 14.35 | 15.00 | 16.20 | 9.48 | 10.11 | 10.42 | 11.07 | 12.27 |
| | 4H | 14.11 | 14.68 | 15.05 | 15.63 | 16.86 | 10.04 | 10.61 | 10.98 | 11.56 | 12.79 |
| | 6H | 14.63 | 15.12 | 15.59 | 16.09 | 17.33 | 10.46 | 10.95 | 11.42 | 11.93 | 13.16 |
| | 8H | 14.80 | 15.27 | 15.77 | 16.23 | 17.48 | 10.59 | 11.05 | 11.55 | 12.02 | 13.26 |
| | 12H | 14.90 | 15.32 | 15.88 | 16.30 | 17.55 | 10.66 | 11.08 | 11.64 | 12.06 | 13.31 |
| 8H | 4H | 14.08 | 14.54 | 15.04 | 15.51 | 16.75 | 10.32 | 10.78 | 11.28 | 11.75 | 12.99 |
| | 6H | 14.65 | 15.03 | 15.64 | 16.04 | 17.28 | 10.84 | 11.23 | 11.83 | 12.23 | 13.48 |
| | 8H | 14.87 | 15.20 | 15.86 | 16.20 | 17.46 | 11.04 | 11.37 | 12.03 | 12.37 | 13.63 |
| | 12H | 15.01 | 15.31 | 16.01 | 16.30 | 17.61 | 11.16 | 11.46 | 12.16 | 12.45 | 13.76 |
| 12H | 4H | 14.04 | 14.45 | 15.02 | 15.43 | 16.68 | 10.33 | 10.75 | 11.31 | 11.73 | 12.98 |
| | 6H | 14.63 | 14.96 | 15.62 | 15.96 | 17.22 | 10.89 | 11.23 | 11.89 | 12.23 | 13.49 |
| | 8H | 14.85 | 15.15 | 15.85 | 16.14 | 17.45 | 11.11 | 11.41 | 12.11 | 12.40 | 13.70 |