

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: P928280

Luminaire Tested: DFN2DIP-HX4F0-070D050US927-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928280
REPORT IS A COMBINATION OF REPORTS P900843 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-070D050US927-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

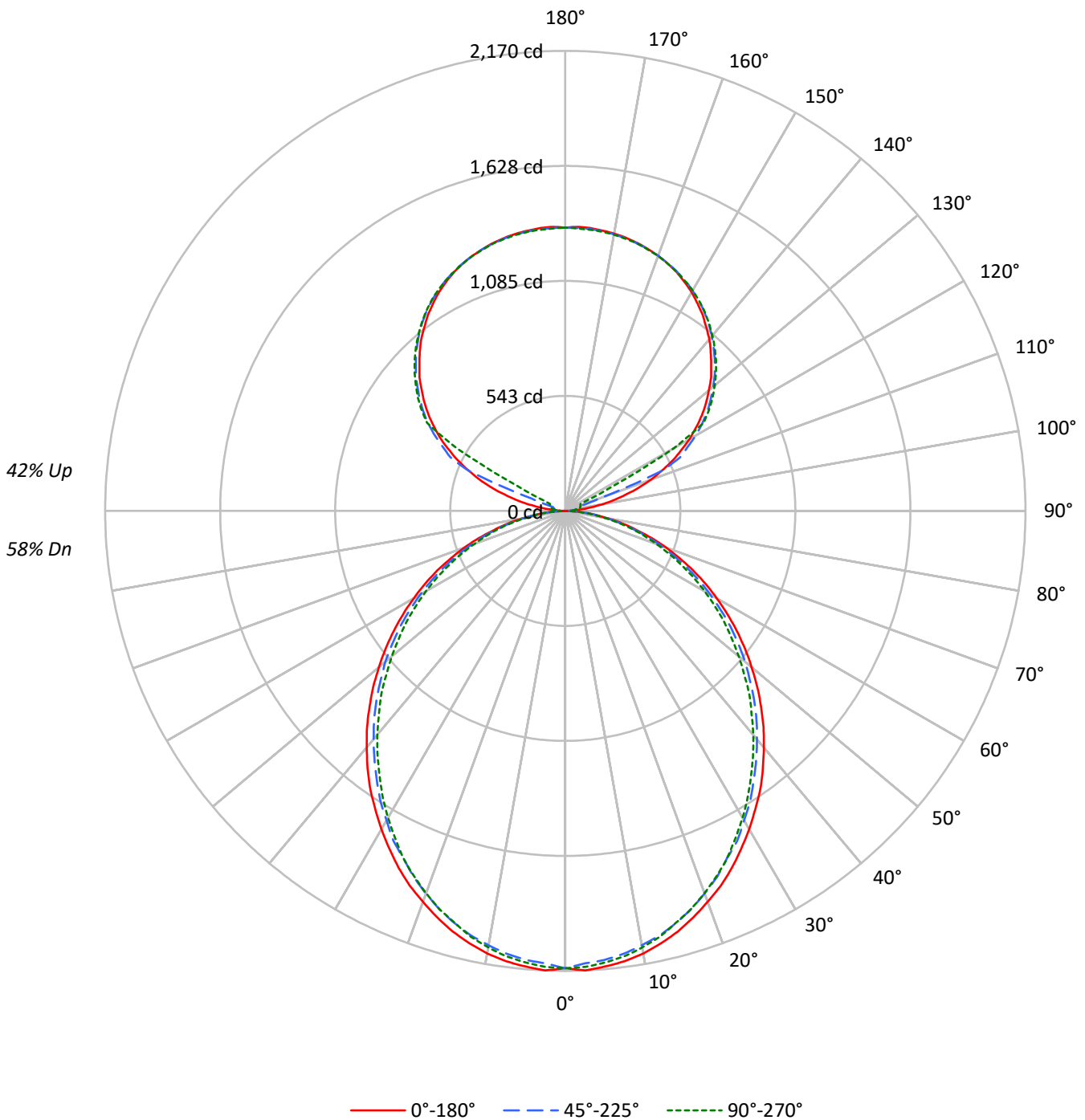
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9409.0 lumens
Efficiency: N/A
Efficacy: 90.6 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): 103.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9972
Total Harmonic Distortion (THDi): 0.128
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 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 64 | 64 | 64 | 58 | | |
| 1 | 100 | 95 | 91 | 88 | 93 | 89 | 86 | 82 | 77 | 75 | 72 | 66 | 65 | 63 | 56 | 55 | 54 | 49 | | |
| 2 | 91 | 83 | 77 | 72 | 84 | 78 | 72 | 68 | 68 | 64 | 60 | 58 | 55 | 53 | 50 | 47 | 45 | 41 | | |
| 3 | 83 | 73 | 66 | 60 | 77 | 69 | 62 | 57 | 60 | 55 | 50 | 52 | 48 | 44 | 44 | 41 | 39 | 35 | | |
| 4 | 76 | 65 | 57 | 51 | 70 | 61 | 54 | 48 | 53 | 47 | 43 | 46 | 42 | 38 | 39 | 36 | 33 | 30 | | |
| 5 | 70 | 58 | 50 | 43 | 65 | 54 | 47 | 41 | 48 | 42 | 37 | 41 | 37 | 33 | 35 | 32 | 29 | 26 | | |
| 6 | 64 | 52 | 44 | 38 | 60 | 49 | 41 | 36 | 43 | 37 | 32 | 37 | 33 | 29 | 32 | 29 | 26 | 23 | | |
| 7 | 59 | 47 | 39 | 33 | 55 | 44 | 37 | 32 | 39 | 33 | 29 | 34 | 29 | 26 | 29 | 26 | 23 | 20 | | |
| 8 | 55 | 43 | 35 | 29 | 51 | 40 | 33 | 28 | 36 | 30 | 26 | 31 | 26 | 23 | 27 | 23 | 20 | 18 | | |
| 9 | 51 | 39 | 31 | 26 | 48 | 37 | 30 | 25 | 33 | 27 | 23 | 29 | 24 | 21 | 25 | 21 | 18 | 16 | | |
| 10 | 48 | 36 | 29 | 24 | 45 | 34 | 27 | 23 | 30 | 25 | 21 | 27 | 22 | 19 | 23 | 19 | 17 | 15 | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1604 | 1604 | 1604 |
| 5° | 1607 | 1582 | 1592 |
| 10° | 1594 | 1561 | 1571 |
| 15° | 1571 | 1535 | 1537 |
| 20° | 1539 | 1500 | 1503 |
| 25° | 1508 | 1457 | 1463 |
| 30° | 1468 | 1418 | 1412 |
| 35° | 1431 | 1371 | 1359 |
| 40° | 1385 | 1324 | 1308 |
| 45° | 1339 | 1276 | 1256 |
| 50° | 1289 | 1227 | 1195 |
| 55° | 1237 | 1169 | 1140 |
| 60° | 1178 | 1101 | 1077 |
| 65° | 1113 | 1031 | 1002 |
| 70° | 1031 | 945 | 921 |
| 75° | 917 | 842 | 846 |
| 80° | 780 | 711 | 704 |
| 85° | 567 | 485 | 468 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1339 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 203.0 | 2.2 |
| 10°-20° | 571.3 | 6.1 |
| 20°-30° | 839.5 | 8.9 |
| 30°-40° | 975.1 | 10.4 |
| 40°-50° | 973.8 | 10.4 |
| 50°-60° | 849.2 | 9.0 |
| 60°-70° | 627.7 | 6.7 |
| 70°-80° | 355.2 | 3.8 |
| 80°-90° | 96.1 | 1.0 |
| 90°-100° | 44.1 | 0.5 |
| 100°-110° | 164.3 | 1.7 |
| 110°-120° | 435.7 | 4.6 |
| 120°-130° | 722.6 | 7.7 |
| 130°-140° | 767.6 | 8.2 |
| 140°-150° | 713.4 | 7.6 |
| 150°-160° | 573.6 | 6.1 |
| 160°-170° | 369.6 | 3.9 |
| 170°-180° | 127.2 | 1.4 |
| 0°-30° | 1613.8 | 17.2 |
| 0°-40° | 2588.9 | 27.5 |
| 0°-60° | 4411.9 | 46.9 |
| 0°-90° | 5491.0 | 58.4 |
| 90°-120° | 644.1 | 6.8 |
| 90°-150° | 2847.7 | 30.3 |
| 90°-180° | 3918.0 | 41.6 |
| 0°-180° | 9409.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2157 | 2157 | 2157 | 2157 | 2157 | |
| 5° | 2157 | 2149 | 2126 | 2143 | 2139 | 205 |
| 15° | 2054 | 2041 | 2014 | 2022 | 2012 | 578 |
| 25° | 1859 | 1842 | 1807 | 1811 | 1807 | 855 |
| 35° | 1604 | 1583 | 1550 | 1537 | 1527 | 1001 |
| 45° | 1305 | 1290 | 1259 | 1236 | 1228 | 1007 |
| 55° | 988 | 975 | 950 | 925 | 915 | 883 |
| 65° | 666 | 653 | 633 | 614 | 604 | 658 |
| 75° | 348 | 344 | 334 | 322 | 326 | 372 |
| 85° | 85 | 83 | 81 | 75 | 73 | 95 |
| 90° | 1 | 12 | 19 | 24 | 26 | 9 |
| 95° | 63 | 31 | 38 | 43 | 42 | 74 |
| 105° | 294 | 323 | 59 | 70 | 74 | 314 |
| 115° | 556 | 572 | 597 | 149 | 79 | 547 |
| 125° | 786 | 799 | 817 | 824 | 827 | 701 |
| 135° | 973 | 988 | 997 | 1007 | 1005 | 752 |
| 145° | 1129 | 1128 | 1144 | 1151 | 1146 | 706 |
| 155° | 1243 | 1234 | 1246 | 1251 | 1244 | 573 |
| 165° | 1309 | 1304 | 1306 | 1313 | 1306 | 370 |
| 175° | 1339 | 1332 | 1334 | 1341 | 1332 | 127 |
| 180° | 1336 | 1336 | 1336 | 1336 | 1336 | |



TEST NUMBER: P928280

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2157.2 | 2157.2 | 2157.2 | 2157.2 | 2157.2 |
| 2.5° | 2169.8 | 2159.4 | 2136.5 | 2157.2 | 2153.2 |
| 5° | 2157.2 | 2149.1 | 2126.2 | 2142.7 | 2138.7 |
| 7.5° | 2142.7 | 2130.3 | 2107.4 | 2124.2 | 2120.0 |
| 10° | 2120.0 | 2105.5 | 2080.6 | 2097.1 | 2091.0 |
| 12.5° | 2088.7 | 2076.5 | 2051.6 | 2061.9 | 2057.7 |
| 15° | 2053.6 | 2041.2 | 2014.1 | 2022.5 | 2012.2 |
| 17.5° | 2009.9 | 1997.7 | 1970.6 | 1981.0 | 1970.6 |
| 20° | 1962.2 | 1949.9 | 1920.8 | 1927.0 | 1918.9 |
| 22.5° | 1914.7 | 1896.0 | 1868.9 | 1868.9 | 1864.7 |
| 25° | 1858.6 | 1842.0 | 1806.9 | 1810.8 | 1806.9 |
| 27.5° | 1796.3 | 1781.8 | 1754.9 | 1748.7 | 1738.4 |
| 30° | 1734.2 | 1717.5 | 1686.5 | 1680.3 | 1671.9 |
| 32.5° | 1667.7 | 1655.4 | 1622.2 | 1609.7 | 1601.3 |
| 35° | 1603.5 | 1582.8 | 1549.5 | 1537.0 | 1526.7 |
| 37.5° | 1530.9 | 1512.2 | 1478.9 | 1464.4 | 1454.0 |
| 40° | 1456.3 | 1439.5 | 1406.3 | 1387.8 | 1379.4 |
| 42.5° | 1383.6 | 1366.9 | 1333.9 | 1313.0 | 1300.6 |
| 45° | 1304.8 | 1290.3 | 1259.0 | 1236.4 | 1228.0 |
| 47.5° | 1228.0 | 1213.5 | 1180.2 | 1157.3 | 1145.1 |
| 50° | 1147.1 | 1136.7 | 1107.6 | 1078.6 | 1068.2 |
| 52.5° | 1068.2 | 1053.8 | 1026.9 | 1004.0 | 989.4 |
| 55° | 987.5 | 975.0 | 950.1 | 925.2 | 914.8 |
| 57.5° | 906.5 | 896.1 | 869.1 | 844.2 | 835.9 |
| 60° | 825.5 | 817.3 | 788.4 | 765.5 | 759.3 |
| 62.5° | 746.7 | 732.2 | 711.5 | 690.9 | 682.5 |
| 65° | 666.0 | 653.4 | 632.7 | 614.0 | 603.7 |
| 67.5° | 583.0 | 572.5 | 553.9 | 539.4 | 531.0 |
| 70° | 506.2 | 497.9 | 479.1 | 464.6 | 456.4 |
| 72.5° | 427.4 | 419.0 | 408.7 | 394.2 | 388.0 |
| 75° | 348.4 | 344.4 | 333.8 | 321.6 | 325.7 |
| 77.5° | 278.0 | 269.6 | 265.4 | 259.2 | 253.1 |
| 80° | 207.5 | 205.4 | 201.2 | 195.0 | 190.8 |
| 82.5° | 141.1 | 141.1 | 139.1 | 130.8 | 130.8 |
| 85° | 85.0 | 83.0 | 81.0 | 74.6 | 72.6 |
| 87.5° | 37.4 | 33.3 | 29.1 | 22.9 | 20.7 |
| 90° | 1.0 | 11.6 | 19.3 | 24.2 | 26.1 |
| 92.5° | 24.2 | 20.4 | 23.2 | 25.2 | 26.1 |
| 95° | 62.8 | 30.9 | 37.7 | 42.6 | 41.6 |
| 97.5° | 113.1 | 33.9 | 49.3 | 52.3 | 53.1 |
| 100° | 171.2 | 38.7 | 55.1 | 62.8 | 64.8 |
| 102.5° | 235.0 | 233.1 | 57.1 | 67.6 | 70.6 |
| 105° | 294.0 | 323.1 | 59.0 | 69.6 | 73.5 |
| 107.5° | 362.7 | 386.7 | 61.0 | 71.5 | 75.5 |
| 110° | 428.5 | 448.7 | 169.3 | 72.5 | 76.3 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 490.3 | 507.7 | 491.3 | 74.4 | 77.4 |
| 115° | 556.1 | 572.5 | 596.7 | 149.0 | 79.4 |
| 117.5° | 613.1 | 632.4 | 649.0 | 510.5 | 257.2 |
| 120° | 676.9 | 691.4 | 708.8 | 720.5 | 589.9 |
| 122.5° | 731.0 | 746.5 | 765.9 | 771.7 | 772.8 |
| 125° | 786.1 | 798.8 | 817.2 | 823.9 | 826.8 |
| 127.5° | 836.4 | 850.0 | 864.6 | 874.2 | 875.2 |
| 130° | 883.9 | 899.4 | 909.9 | 920.6 | 919.7 |
| 132.5° | 932.3 | 944.9 | 955.4 | 964.2 | 963.2 |
| 135° | 972.9 | 988.4 | 997.0 | 1006.8 | 1004.8 |
| 137.5° | 1015.3 | 1027.0 | 1036.7 | 1046.4 | 1043.5 |
| 140° | 1056.9 | 1064.8 | 1075.3 | 1084.0 | 1079.3 |
| 142.5° | 1091.9 | 1098.7 | 1111.2 | 1118.9 | 1114.0 |
| 145° | 1128.6 | 1127.6 | 1144.0 | 1150.8 | 1145.9 |
| 147.5° | 1160.4 | 1157.5 | 1174.0 | 1178.8 | 1175.0 |
| 150° | 1191.4 | 1184.7 | 1200.1 | 1205.9 | 1201.1 |
| 152.5° | 1217.5 | 1209.8 | 1224.3 | 1230.1 | 1223.3 |
| 155° | 1242.6 | 1234.0 | 1245.6 | 1251.4 | 1243.7 |
| 157.5° | 1262.9 | 1255.2 | 1264.0 | 1270.8 | 1262.9 |
| 160° | 1280.4 | 1274.6 | 1280.4 | 1286.1 | 1279.4 |
| 162.5° | 1295.8 | 1290.1 | 1294.8 | 1301.7 | 1292.9 |
| 165° | 1309.3 | 1303.6 | 1306.5 | 1313.2 | 1306.5 |
| 167.5° | 1320.0 | 1314.2 | 1317.2 | 1323.9 | 1315.2 |
| 170° | 1328.7 | 1322.9 | 1324.9 | 1331.6 | 1322.9 |
| 172.5° | 1334.5 | 1328.7 | 1330.7 | 1337.5 | 1328.7 |
| 175° | 1339.4 | 1332.5 | 1334.5 | 1341.3 | 1331.6 |
| 177.5° | 1341.3 | 1334.5 | 1335.5 | 1342.3 | 1333.6 |
| 180° | 1336.4 | 1336.4 | 1336.4 | 1336.4 | 1336.4 |



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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 | 9.65 | 10.59 | 10.53 | 11.50 | 12.64 | 9.22 | 10.16 | 10.10 | 11.06 | 12.21 |
| | 3H | 11.32 | 12.16 | 12.21 | 13.08 | 14.25 | 10.85 | 11.69 | 11.74 | 12.60 | 13.78 |
| | 4H | 11.91 | 12.71 | 12.82 | 13.63 | 14.81 | 11.44 | 12.24 | 12.35 | 13.15 | 14.34 |
| | 6H | 12.32 | 13.05 | 13.24 | 13.98 | 15.17 | 11.84 | 12.58 | 12.76 | 13.50 | 14.70 |
| | 8H | 12.42 | 13.13 | 13.35 | 14.07 | 15.26 | 11.95 | 12.65 | 12.88 | 13.59 | 14.78 |
| | 12H | 12.48 | 13.14 | 13.41 | 14.08 | 15.30 | 11.99 | 12.66 | 12.93 | 13.60 | 14.82 |
| 4H | 2H | 10.12 | 10.92 | 11.04 | 11.84 | 13.02 | 9.78 | 10.58 | 10.69 | 11.50 | 12.68 |
| | 3H | 12.00 | 12.67 | 12.92 | 13.61 | 14.81 | 11.61 | 12.27 | 12.53 | 13.22 | 14.42 |
| | 4H | 12.72 | 13.33 | 13.65 | 14.27 | 15.49 | 12.31 | 12.92 | 13.25 | 13.86 | 15.09 |
| | 6H | 13.24 | 13.76 | 14.19 | 14.73 | 15.95 | 12.83 | 13.35 | 13.78 | 14.32 | 15.54 |
| | 8H | 13.39 | 13.88 | 14.34 | 14.84 | 16.08 | 12.98 | 13.47 | 13.93 | 14.43 | 15.67 |
| | 12H | 13.47 | 13.91 | 14.44 | 14.89 | 16.13 | 13.05 | 13.49 | 14.02 | 14.47 | 15.71 |
| 8H | 4H | 12.92 | 13.41 | 13.87 | 14.37 | 15.61 | 12.56 | 13.05 | 13.51 | 14.01 | 15.25 |
| | 6H | 13.56 | 13.96 | 14.53 | 14.97 | 16.20 | 13.19 | 13.60 | 14.17 | 14.60 | 15.84 |
| | 8H | 13.78 | 14.14 | 14.77 | 15.13 | 16.38 | 13.41 | 13.77 | 14.40 | 14.76 | 16.01 |
| | 12H | 13.92 | 14.23 | 14.91 | 15.22 | 16.52 | 13.53 | 13.85 | 14.52 | 14.83 | 16.13 |
| 12H | 4H | 12.91 | 13.35 | 13.88 | 14.33 | 15.57 | 12.56 | 13.00 | 13.53 | 13.98 | 15.22 |
| | 6H | 13.59 | 13.95 | 14.57 | 14.94 | 16.19 | 13.24 | 13.60 | 14.22 | 14.59 | 15.84 |
| | 8H | 13.83 | 14.15 | 14.82 | 15.14 | 16.44 | 13.48 | 13.79 | 14.47 | 14.78 | 16.08 |