

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: P913276

Luminaire Tested: DFN2DIP-4P4F0-060D070US927-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P913276
REPORT IS A COMBINATION OF REPORTS P899134 AND P895967
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-060D070US927-RLLFLL
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

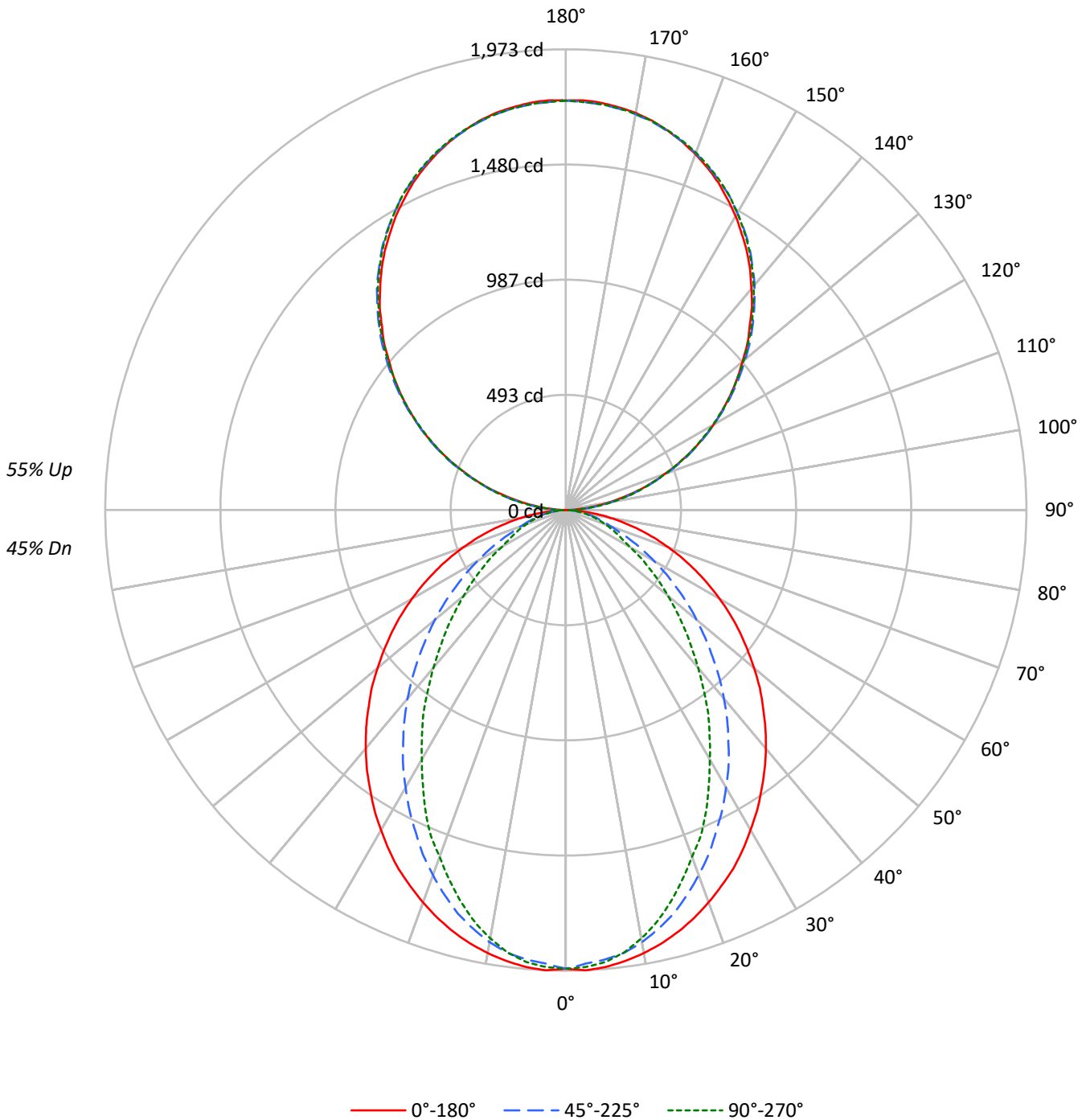
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8947.7 lumens
Efficiency: N/A
Efficacy: 73.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 122.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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: P913276

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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 | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 | 45 | 45 | 45 | 45 |
| 1 | 97 | 93 | 89 | 86 | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 58 | 57 | 55 | 46 | 45 | 44 | 39 | 39 | 39 | 39 |
| 2 | 89 | 82 | 76 | 71 | 81 | 75 | 70 | 66 | 63 | 59 | 56 | 52 | 49 | 47 | 41 | 40 | 38 | 33 | 33 | 33 | 33 |
| 3 | 81 | 72 | 65 | 60 | 74 | 67 | 60 | 56 | 56 | 51 | 48 | 46 | 43 | 40 | 37 | 35 | 33 | 29 | 29 | 29 | 29 |
| 4 | 75 | 64 | 57 | 51 | 68 | 59 | 53 | 47 | 50 | 45 | 41 | 41 | 38 | 35 | 33 | 31 | 29 | 25 | 25 | 25 | 25 |
| 5 | 69 | 57 | 50 | 44 | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 37 | 33 | 30 | 30 | 28 | 25 | 22 | 22 | 22 | 22 |
| 6 | 63 | 52 | 44 | 38 | 58 | 48 | 41 | 36 | 41 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 | 20 | 20 | 20 | 20 |
| 7 | 59 | 47 | 39 | 34 | 54 | 43 | 36 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 25 | 22 | 20 | 18 | 18 | 18 | 18 |
| 8 | 54 | 42 | 35 | 30 | 50 | 39 | 33 | 28 | 34 | 28 | 25 | 28 | 24 | 21 | 23 | 20 | 18 | 16 | 16 | 16 | 16 |
| 9 | 51 | 39 | 32 | 27 | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 26 | 22 | 19 | 22 | 19 | 17 | 14 | 14 | 14 | 14 |
| 10 | 47 | 36 | 29 | 24 | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 24 | 20 | 18 | 20 | 17 | 15 | 13 | 13 | 13 | 13 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1274 | 1274 | 1274 |
| 5° | 1277 | 1255 | 1263 |
| 10° | 1264 | 1230 | 1222 |
| 15° | 1247 | 1190 | 1159 |
| 20° | 1224 | 1134 | 1081 |
| 25° | 1200 | 1072 | 1006 |
| 30° | 1169 | 1008 | 911 |
| 35° | 1138 | 939 | 828 |
| 40° | 1106 | 867 | 732 |
| 45° | 1070 | 788 | 645 |
| 50° | 1032 | 708 | 560 |
| 55° | 993 | 623 | 478 |
| 60° | 947 | 533 | 394 |
| 65° | 895 | 442 | 355 |
| 70° | 831 | 357 | 322 |
| 75° | 751 | 316 | 294 |
| 80° | 635 | 266 | 257 |
| 85° | 444 | 180 | 196 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1327 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 184.1 | 2.1 |
| 10°-20° | 505.4 | 5.6 |
| 20°-30° | 709.6 | 7.9 |
| 30°-40° | 773.5 | 8.6 |
| 40°-50° | 710.9 | 7.9 |
| 50°-60° | 558.3 | 6.2 |
| 60°-70° | 363.4 | 4.1 |
| 70°-80° | 187.1 | 2.1 |
| 80°-90° | 52.7 | 0.6 |
| 90°-100° | 108.5 | 1.2 |
| 100°-110° | 344.8 | 3.9 |
| 110°-120° | 590.1 | 6.6 |
| 120°-130° | 776.1 | 8.7 |
| 130°-140° | 871.1 | 9.7 |
| 140°-150° | 854.2 | 9.5 |
| 150°-160° | 716.6 | 8.0 |
| 160°-170° | 475.2 | 5.3 |
| 170°-180° | 166.1 | 1.9 |
| 0°-30° | 1399.1 | 15.6 |
| 0°-40° | 2172.6 | 24.3 |
| 0°-60° | 3441.9 | 38.5 |
| 0°-90° | 4045.1 | 45.2 |
| 90°-120° | 1043.4 | 11.7 |
| 90°-150° | 3544.8 | 39.6 |
| 90°-180° | 4903.0 | 54.8 |
| 0°-180° | 8947.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1964 | 1964 | 1964 | 1964 | 1964 | |
| 5° | 1964 | 1956 | 1932 | 1948 | 1943 | 186 |
| 15° | 1868 | 1849 | 1788 | 1755 | 1737 | 527 |
| 25° | 1696 | 1639 | 1522 | 1449 | 1422 | 780 |
| 35° | 1461 | 1371 | 1214 | 1102 | 1063 | 915 |
| 45° | 1195 | 1076 | 889 | 763 | 720 | 923 |
| 55° | 908 | 770 | 578 | 471 | 437 | 812 |
| 65° | 613 | 469 | 309 | 249 | 244 | 608 |
| 75° | 327 | 203 | 142 | 130 | 128 | 346 |
| 85° | 76 | 39 | 34 | 34 | 34 | 88 |
| 90° | 2 | 19 | 52 | 49 | 50 | 9 |
| 95° | 77 | 92 | 95 | 95 | 92 | 86 |
| 105° | 318 | 322 | 326 | 328 | 328 | 336 |
| 115° | 592 | 601 | 598 | 596 | 592 | 586 |
| 125° | 861 | 874 | 870 | 866 | 864 | 770 |
| 135° | 1114 | 1130 | 1134 | 1132 | 1128 | 861 |
| 145° | 1352 | 1363 | 1372 | 1373 | 1367 | 845 |
| 155° | 1546 | 1551 | 1556 | 1563 | 1558 | 712 |
| 165° | 1682 | 1681 | 1681 | 1691 | 1684 | 475 |
| 175° | 1751 | 1746 | 1743 | 1754 | 1745 | 166 |
| 180° | 1754 | 1754 | 1754 | 1754 | 1754 | |



TEST NUMBER: P913276

CATALOG NUMBER: DFN2DIP-4P4F0-060D070US927-RLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1964.5 | 1964.5 | 1964.5 | 1964.5 | 1964.5 |
| 2.5° | 1973.3 | 1964.5 | 1944.8 | 1962.7 | 1959.1 |
| 5° | 1964.5 | 1955.6 | 1932.4 | 1948.4 | 1943.1 |
| 7.5° | 1948.4 | 1937.8 | 1913.0 | 1919.9 | 1911.1 |
| 10° | 1927.1 | 1914.6 | 1879.2 | 1873.7 | 1863.1 |
| 12.5° | 1900.5 | 1884.4 | 1836.4 | 1825.8 | 1806.2 |
| 15° | 1868.4 | 1848.8 | 1788.4 | 1754.7 | 1736.9 |
| 17.5° | 1831.1 | 1802.6 | 1727.9 | 1688.9 | 1660.4 |
| 20° | 1788.4 | 1752.8 | 1664.0 | 1619.6 | 1580.4 |
| 22.5° | 1742.2 | 1701.3 | 1598.1 | 1537.8 | 1511.2 |
| 25° | 1696.1 | 1639.1 | 1521.8 | 1449.0 | 1422.2 |
| 27.5° | 1641.0 | 1580.4 | 1450.6 | 1367.1 | 1326.2 |
| 30° | 1582.3 | 1514.6 | 1372.4 | 1281.8 | 1233.7 |
| 32.5° | 1525.3 | 1443.5 | 1297.9 | 1191.1 | 1146.6 |
| 35° | 1461.4 | 1370.7 | 1214.3 | 1102.2 | 1063.0 |
| 37.5° | 1399.2 | 1301.2 | 1136.1 | 1013.3 | 968.9 |
| 40° | 1333.3 | 1226.8 | 1054.2 | 928.0 | 881.8 |
| 42.5° | 1265.8 | 1152.1 | 972.5 | 840.8 | 796.5 |
| 45° | 1194.7 | 1075.5 | 889.0 | 762.6 | 719.9 |
| 47.5° | 1127.2 | 1001.0 | 809.0 | 682.6 | 643.6 |
| 50° | 1052.5 | 926.3 | 730.7 | 607.9 | 570.8 |
| 52.5° | 979.5 | 846.1 | 656.0 | 538.7 | 504.9 |
| 55° | 908.4 | 769.8 | 577.7 | 471.2 | 437.4 |
| 57.5° | 835.6 | 693.3 | 508.5 | 408.9 | 380.4 |
| 60° | 760.9 | 618.7 | 435.5 | 345.0 | 316.5 |
| 62.5° | 688.1 | 545.9 | 373.3 | 288.0 | 273.9 |
| 65° | 613.4 | 469.3 | 309.3 | 249.0 | 243.5 |
| 67.5° | 542.2 | 398.2 | 249.0 | 218.6 | 213.3 |
| 70° | 467.5 | 328.9 | 206.1 | 188.5 | 181.3 |
| 72.5° | 396.5 | 264.8 | 172.4 | 158.3 | 154.6 |
| 75° | 327.1 | 202.6 | 142.2 | 129.8 | 128.1 |
| 77.5° | 257.9 | 143.9 | 112.0 | 104.9 | 101.3 |
| 80° | 193.7 | 103.1 | 85.2 | 78.3 | 78.3 |
| 82.5° | 135.1 | 69.4 | 58.6 | 55.1 | 55.1 |
| 85° | 76.4 | 39.1 | 33.7 | 33.7 | 33.7 |
| 87.5° | 28.5 | 14.2 | 14.2 | 12.4 | 12.4 |
| 90° | 1.6 | 19.0 | 51.8 | 48.6 | 50.2 |
| 92.5° | 32.8 | 44.4 | 46.0 | 47.6 | 47.6 |
| 95° | 77.2 | 92.0 | 94.7 | 94.7 | 92.0 |
| 97.5° | 128.5 | 142.2 | 148.1 | 148.1 | 148.1 |
| 100° | 187.7 | 199.9 | 204.1 | 204.1 | 202.5 |
| 102.5° | 250.1 | 259.0 | 264.9 | 266.5 | 264.9 |
| 105° | 318.3 | 322.5 | 325.7 | 328.4 | 328.4 |
| 107.5° | 386.0 | 392.3 | 392.3 | 393.4 | 386.0 |
| 110° | 451.5 | 460.0 | 460.0 | 460.0 | 455.7 |



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CATALOG NUMBER: DFN2DIP-4P4F0-060D070US927-RLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 522.4 | 531.4 | 529.8 | 525.5 | 522.4 |
| 115° | 592.2 | 600.6 | 598.0 | 596.4 | 592.2 |
| 117.5° | 661.4 | 673.0 | 665.7 | 661.4 | 657.2 |
| 120° | 731.2 | 742.8 | 731.2 | 731.2 | 726.4 |
| 122.5° | 794.6 | 809.5 | 802.1 | 797.8 | 794.6 |
| 125° | 861.3 | 874.5 | 870.3 | 865.5 | 864.0 |
| 127.5° | 926.3 | 942.7 | 936.9 | 930.6 | 926.3 |
| 130° | 987.1 | 1006.1 | 1003.5 | 1000.4 | 994.5 |
| 132.5° | 1055.3 | 1070.2 | 1071.2 | 1063.8 | 1059.5 |
| 135° | 1114.0 | 1130.4 | 1133.6 | 1131.9 | 1127.7 |
| 137.5° | 1179.6 | 1192.8 | 1195.4 | 1194.4 | 1188.0 |
| 140° | 1237.2 | 1250.5 | 1257.8 | 1257.8 | 1252.0 |
| 142.5° | 1296.4 | 1309.6 | 1313.8 | 1315.4 | 1309.6 |
| 145° | 1352.5 | 1363.0 | 1371.5 | 1373.1 | 1367.3 |
| 147.5° | 1402.7 | 1415.9 | 1422.3 | 1424.9 | 1419.1 |
| 150° | 1454.5 | 1463.5 | 1469.3 | 1474.1 | 1469.3 |
| 152.5° | 1500.5 | 1509.5 | 1516.9 | 1522.7 | 1516.9 |
| 155° | 1546.5 | 1550.7 | 1555.5 | 1562.9 | 1558.1 |
| 157.5° | 1586.2 | 1589.4 | 1592.0 | 1602.6 | 1595.1 |
| 160° | 1621.6 | 1624.8 | 1626.3 | 1635.3 | 1629.0 |
| 162.5° | 1654.4 | 1654.4 | 1656.0 | 1666.0 | 1658.6 |
| 165° | 1682.4 | 1680.8 | 1680.8 | 1691.4 | 1683.9 |
| 167.5° | 1707.8 | 1703.0 | 1703.0 | 1713.6 | 1706.2 |
| 170° | 1726.8 | 1722.6 | 1721.0 | 1731.5 | 1722.6 |
| 172.5° | 1740.0 | 1735.7 | 1734.2 | 1744.8 | 1735.7 |
| 175° | 1750.6 | 1746.4 | 1743.2 | 1753.7 | 1744.8 |
| 177.5° | 1756.4 | 1752.1 | 1749.0 | 1758.0 | 1749.0 |
| 180° | 1753.7 | 1753.7 | 1753.7 | 1753.7 | 1753.7 |



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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 | 7.54 | 8.33 | 8.55 | 9.34 | 10.68 | 3.50 | 4.29 | 4.51 | 5.30 | 6.65 |
| | 3H | 9.22 | 9.93 | 10.24 | 10.95 | 12.31 | 4.69 | 5.40 | 5.70 | 6.42 | 7.78 |
| | 4H | 9.83 | 10.50 | 10.86 | 11.52 | 12.89 | 5.14 | 5.81 | 6.17 | 6.83 | 8.20 |
| | 6H | 10.26 | 10.87 | 11.29 | 11.90 | 13.28 | 5.46 | 6.08 | 6.50 | 7.10 | 8.48 |
| | 8H | 10.39 | 10.97 | 11.43 | 12.01 | 13.39 | 5.55 | 6.14 | 6.59 | 7.18 | 8.56 |
| | 12H | 10.45 | 11.01 | 11.50 | 12.04 | 13.44 | 5.59 | 6.15 | 6.64 | 7.19 | 8.59 |
| 4H | 2H | 7.56 | 8.23 | 8.59 | 9.25 | 10.62 | 4.10 | 4.77 | 5.13 | 5.79 | 7.16 |
| | 3H | 9.39 | 9.94 | 10.43 | 10.99 | 12.38 | 5.45 | 6.00 | 6.49 | 7.05 | 8.44 |
| | 4H | 10.08 | 10.59 | 11.13 | 11.63 | 13.04 | 5.99 | 6.50 | 7.04 | 7.55 | 8.95 |
| | 6H | 10.60 | 11.04 | 11.66 | 12.10 | 13.50 | 6.41 | 6.85 | 7.47 | 7.92 | 9.32 |
| | 8H | 10.78 | 11.19 | 11.84 | 12.25 | 13.66 | 6.54 | 6.95 | 7.60 | 8.01 | 9.42 |
| | 12H | 10.88 | 11.24 | 11.95 | 12.32 | 13.74 | 6.61 | 6.98 | 7.68 | 8.05 | 9.47 |
| 8H | 4H | 10.05 | 10.46 | 11.11 | 11.51 | 12.93 | 6.27 | 6.68 | 7.33 | 7.74 | 9.16 |
| | 6H | 10.62 | 10.96 | 11.70 | 12.06 | 13.47 | 6.79 | 7.13 | 7.88 | 8.23 | 9.64 |
| | 8H | 10.84 | 11.14 | 11.93 | 12.22 | 13.65 | 6.99 | 7.28 | 8.08 | 8.37 | 9.80 |
| | 12H | 10.98 | 11.24 | 12.07 | 12.32 | 13.79 | 7.11 | 7.37 | 8.20 | 8.44 | 9.92 |
| 12H | 4H | 10.00 | 10.37 | 11.07 | 11.44 | 12.86 | 6.28 | 6.65 | 7.35 | 7.72 | 9.14 |
| | 6H | 10.59 | 10.89 | 11.68 | 11.97 | 13.41 | 6.84 | 7.14 | 7.93 | 8.22 | 9.66 |
| | 8H | 10.82 | 11.08 | 11.91 | 12.16 | 13.63 | 7.06 | 7.32 | 8.15 | 8.39 | 9.87 |