

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: P923682

Luminaire Tested: DFN2DIP-TR4F0-050D060US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923682
REPORT IS A COMBINATION OF REPORTS P900407 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-050D060US940-FLLFLL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

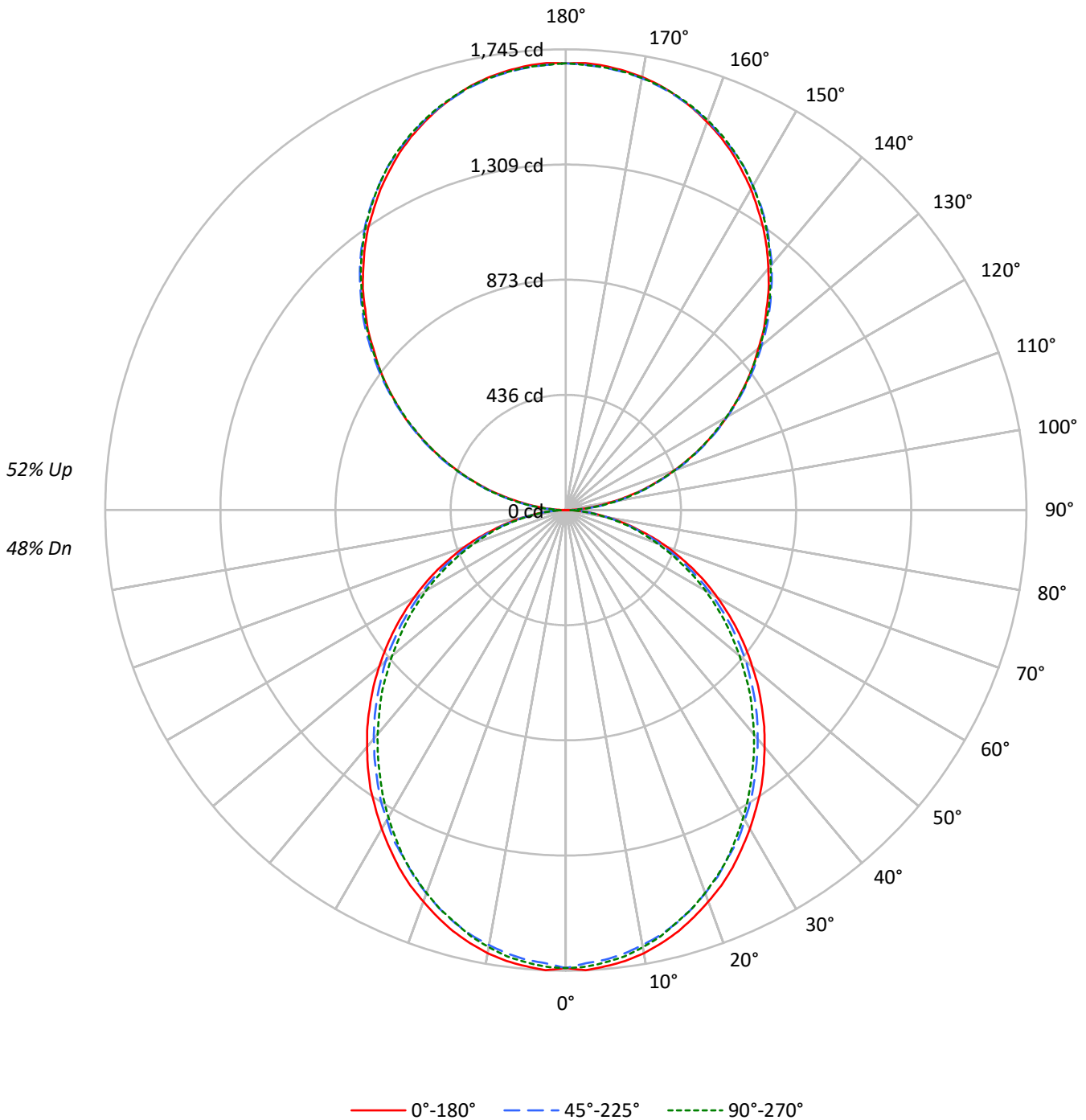
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9149.0 lumens
Efficiency: N/A
Efficacy: 105.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 86.7
Input Voltage (V):
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.996
Total Harmonic Distortion (THDi): 0.064
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: P923682

CATALOG NUMBER: DFN2DIP-TR4F0-050D060US940-FLLFLL

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 | 107 | 107 | 107 | 107 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 68 | 68 | 68 | 55 | 55 | 55 | | | | 48 |
| 1 | 97 | 93 | 89 | 86 | 89 | 86 | 82 | 79 | 72 | 70 | 68 | 60 | 58 | 57 | 48 | 47 | 46 | | | | 41 |
| 2 | 89 | 81 | 75 | 70 | 81 | 75 | 70 | 65 | 63 | 59 | 56 | 52 | 50 | 47 | 42 | 41 | 39 | | | | 34 |
| 3 | 81 | 71 | 64 | 58 | 74 | 66 | 60 | 54 | 56 | 51 | 47 | 46 | 43 | 40 | 38 | 35 | 33 | | | | 29 |
| 4 | 74 | 63 | 55 | 49 | 68 | 59 | 52 | 46 | 50 | 44 | 40 | 41 | 37 | 34 | 34 | 31 | 28 | | | | 25 |
| 5 | 68 | 56 | 48 | 42 | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 37 | 33 | 30 | 30 | 27 | 25 | | | | 22 |
| 6 | 63 | 51 | 42 | 37 | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 34 | 29 | 26 | 27 | 24 | 22 | | | | 19 |
| 7 | 58 | 46 | 38 | 32 | 53 | 42 | 35 | 30 | 36 | 31 | 27 | 30 | 26 | 23 | 25 | 22 | 19 | | | | 17 |
| 8 | 54 | 41 | 34 | 28 | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 20 | 23 | 20 | 17 | | | | 15 |
| 9 | 50 | 38 | 30 | 25 | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 16 | | | | 14 |
| 10 | 47 | 35 | 27 | 23 | 43 | 32 | 26 | 21 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 14 | | | | 12 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1378 | 1378 | 1378 |
| 5° | 1380 | 1359 | 1368 |
| 10° | 1369 | 1341 | 1350 |
| 15° | 1349 | 1319 | 1321 |
| 20° | 1322 | 1288 | 1291 |
| 25° | 1295 | 1251 | 1257 |
| 30° | 1261 | 1217 | 1213 |
| 35° | 1229 | 1177 | 1167 |
| 40° | 1189 | 1136 | 1123 |
| 45° | 1150 | 1095 | 1078 |
| 50° | 1107 | 1053 | 1026 |
| 55° | 1062 | 1003 | 978 |
| 60° | 1011 | 944 | 923 |
| 65° | 955 | 883 | 859 |
| 70° | 884 | 809 | 789 |
| 75° | 786 | 721 | 725 |
| 80° | 668 | 608 | 603 |
| 85° | 483 | 412 | 399 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1317 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 163.3 | 1.8 |
| 10°-20° | 459.4 | 5.0 |
| 20°-30° | 675.2 | 7.4 |
| 30°-40° | 784.2 | 8.6 |
| 40°-50° | 783.2 | 8.6 |
| 50°-60° | 682.9 | 7.5 |
| 60°-70° | 504.8 | 5.5 |
| 70°-80° | 285.6 | 3.1 |
| 80°-90° | 80.2 | 0.9 |
| 90°-100° | 104.7 | 1.1 |
| 100°-110° | 332.7 | 3.6 |
| 110°-120° | 569.3 | 6.2 |
| 120°-130° | 748.8 | 8.2 |
| 130°-140° | 840.5 | 9.2 |
| 140°-150° | 824.2 | 9.0 |
| 150°-160° | 691.4 | 7.6 |
| 160°-170° | 458.5 | 5.0 |
| 170°-180° | 160.3 | 1.8 |
| 0°-30° | 1297.9 | 14.2 |
| 0°-40° | 2082.0 | 22.8 |
| 0°-60° | 3548.1 | 38.8 |
| 0°-90° | 4418.8 | 48.3 |
| 90°-120° | 1006.7 | 11.0 |
| 90°-150° | 3420.1 | 37.4 |
| 90°-180° | 4730.0 | 51.7 |
| 0°-180° | 9149.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1735 | 1735 | 1735 | 1735 | 1735 | |
| 5° | 1735 | 1728 | 1710 | 1723 | 1720 | 165 |
| 15° | 1651 | 1642 | 1620 | 1627 | 1618 | 465 |
| 25° | 1495 | 1481 | 1453 | 1456 | 1453 | 688 |
| 35° | 1290 | 1273 | 1246 | 1236 | 1228 | 805 |
| 45° | 1049 | 1038 | 1012 | 994 | 988 | 810 |
| 55° | 794 | 784 | 764 | 744 | 736 | 710 |
| 65° | 536 | 526 | 509 | 494 | 485 | 530 |
| 75° | 280 | 277 | 268 | 259 | 262 | 299 |
| 85° | 68 | 67 | 65 | 60 | 58 | 76 |
| 90° | 2 | 18 | 50 | 47 | 48 | 9 |
| 95° | 74 | 89 | 91 | 91 | 89 | 83 |
| 105° | 307 | 311 | 314 | 317 | 317 | 324 |
| 115° | 571 | 580 | 577 | 575 | 571 | 565 |
| 125° | 831 | 844 | 840 | 835 | 834 | 743 |
| 135° | 1075 | 1091 | 1094 | 1092 | 1088 | 831 |
| 145° | 1305 | 1315 | 1323 | 1325 | 1319 | 815 |
| 155° | 1492 | 1496 | 1501 | 1508 | 1503 | 687 |
| 165° | 1623 | 1622 | 1622 | 1632 | 1625 | 458 |
| 175° | 1689 | 1685 | 1682 | 1692 | 1683 | 160 |
| 180° | 1692 | 1692 | 1692 | 1692 | 1692 | |



TEST NUMBER: P923682

CATALOG NUMBER: DFN2DIP-TR4F0-050D060US940-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1734.8 | 1734.8 | 1734.8 | 1734.8 | 1734.8 |
| 2.5° | 1744.9 | 1736.6 | 1718.2 | 1734.8 | 1731.7 |
| 5° | 1734.8 | 1728.3 | 1709.9 | 1723.1 | 1720.0 |
| 7.5° | 1723.1 | 1713.2 | 1694.9 | 1708.3 | 1705.0 |
| 10° | 1705.0 | 1693.3 | 1673.3 | 1686.5 | 1681.6 |
| 12.5° | 1679.8 | 1669.9 | 1649.9 | 1658.2 | 1654.8 |
| 15° | 1651.4 | 1641.5 | 1619.8 | 1626.6 | 1618.2 |
| 17.5° | 1616.4 | 1606.5 | 1584.7 | 1593.0 | 1584.7 |
| 20° | 1578.1 | 1568.2 | 1544.8 | 1549.7 | 1543.2 |
| 22.5° | 1539.8 | 1524.7 | 1503.0 | 1503.0 | 1499.6 |
| 25° | 1494.7 | 1481.4 | 1453.0 | 1456.3 | 1453.0 |
| 27.5° | 1444.6 | 1432.9 | 1411.3 | 1406.3 | 1398.0 |
| 30° | 1394.6 | 1381.3 | 1356.3 | 1351.3 | 1344.6 |
| 32.5° | 1341.2 | 1331.3 | 1304.6 | 1294.5 | 1287.8 |
| 35° | 1289.5 | 1272.9 | 1246.2 | 1236.1 | 1227.8 |
| 37.5° | 1231.1 | 1216.1 | 1189.4 | 1177.7 | 1169.4 |
| 40° | 1171.2 | 1157.7 | 1131.0 | 1116.1 | 1109.4 |
| 42.5° | 1112.8 | 1099.3 | 1072.7 | 1055.9 | 1046.0 |
| 45° | 1049.4 | 1037.7 | 1012.5 | 994.3 | 987.6 |
| 47.5° | 987.6 | 975.9 | 949.2 | 930.8 | 920.9 |
| 50° | 922.5 | 914.2 | 890.8 | 867.5 | 859.1 |
| 52.5° | 859.1 | 847.4 | 825.8 | 807.4 | 795.8 |
| 55° | 794.2 | 784.1 | 764.0 | 744.0 | 735.8 |
| 57.5° | 729.0 | 720.7 | 698.9 | 678.9 | 672.2 |
| 60° | 663.9 | 657.4 | 634.0 | 615.5 | 610.6 |
| 62.5° | 600.6 | 588.9 | 572.2 | 555.5 | 548.8 |
| 65° | 535.6 | 525.5 | 508.8 | 493.8 | 485.4 |
| 67.5° | 468.9 | 460.4 | 445.5 | 433.8 | 427.0 |
| 70° | 407.1 | 400.4 | 385.3 | 373.6 | 367.1 |
| 72.5° | 343.8 | 337.0 | 328.7 | 317.0 | 312.0 |
| 75° | 280.2 | 277.0 | 268.5 | 258.6 | 262.0 |
| 77.5° | 223.6 | 216.8 | 213.5 | 208.5 | 203.6 |
| 80° | 166.9 | 165.1 | 161.8 | 156.9 | 153.5 |
| 82.5° | 113.4 | 113.4 | 111.8 | 105.1 | 105.1 |
| 85° | 68.3 | 66.7 | 65.1 | 60.0 | 58.4 |
| 87.5° | 30.1 | 26.8 | 23.4 | 18.4 | 16.7 |
| 90° | 1.5 | 18.4 | 50.0 | 46.9 | 48.4 |
| 92.5° | 31.7 | 42.9 | 44.4 | 45.9 | 45.9 |
| 95° | 74.5 | 88.7 | 91.3 | 91.3 | 88.7 |
| 97.5° | 123.9 | 137.2 | 142.9 | 142.9 | 142.9 |
| 100° | 181.1 | 192.8 | 196.9 | 196.9 | 195.4 |
| 102.5° | 241.3 | 249.9 | 255.6 | 257.1 | 255.6 |
| 105° | 307.1 | 311.2 | 314.2 | 316.8 | 316.8 |
| 107.5° | 372.4 | 378.5 | 378.5 | 379.5 | 372.4 |
| 110° | 435.7 | 443.8 | 443.8 | 443.8 | 439.7 |



TEST NUMBER: P923682

CATALOG NUMBER: DFN2DIP-TR4F0-050D060US940-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.0 | 512.6 | 511.1 | 507.0 | 504.0 |
| 115° | 571.3 | 579.5 | 576.9 | 575.4 | 571.3 |
| 117.5° | 638.2 | 649.4 | 642.2 | 638.2 | 634.1 |
| 120° | 705.5 | 716.8 | 705.5 | 705.5 | 700.9 |
| 122.5° | 766.7 | 781.0 | 773.8 | 769.8 | 766.7 |
| 125° | 831.0 | 843.7 | 839.6 | 835.1 | 833.6 |
| 127.5° | 893.8 | 909.5 | 903.9 | 897.9 | 893.8 |
| 130° | 952.4 | 970.8 | 968.2 | 965.2 | 959.6 |
| 132.5° | 1018.2 | 1032.5 | 1033.5 | 1026.4 | 1022.3 |
| 135° | 1074.9 | 1090.7 | 1093.7 | 1092.2 | 1088.1 |
| 137.5° | 1138.1 | 1150.8 | 1153.4 | 1152.4 | 1146.3 |
| 140° | 1193.7 | 1206.5 | 1213.6 | 1213.6 | 1208.0 |
| 142.5° | 1250.8 | 1263.6 | 1267.7 | 1269.2 | 1263.6 |
| 145° | 1304.9 | 1315.1 | 1323.3 | 1324.8 | 1319.2 |
| 147.5° | 1353.3 | 1366.1 | 1372.3 | 1374.7 | 1369.1 |
| 150° | 1403.4 | 1412.0 | 1417.6 | 1422.2 | 1417.6 |
| 152.5° | 1447.7 | 1456.4 | 1463.6 | 1469.2 | 1463.6 |
| 155° | 1492.1 | 1496.2 | 1500.7 | 1508.0 | 1503.3 |
| 157.5° | 1530.4 | 1533.5 | 1536.0 | 1546.2 | 1539.1 |
| 160° | 1564.6 | 1567.6 | 1569.1 | 1577.8 | 1571.7 |
| 162.5° | 1596.2 | 1596.2 | 1597.7 | 1607.4 | 1600.3 |
| 165° | 1623.2 | 1621.7 | 1621.7 | 1631.9 | 1624.8 |
| 167.5° | 1647.7 | 1643.2 | 1643.2 | 1653.3 | 1646.2 |
| 170° | 1666.1 | 1662.0 | 1660.5 | 1670.6 | 1662.0 |
| 172.5° | 1678.8 | 1674.7 | 1673.2 | 1683.4 | 1674.7 |
| 175° | 1689.0 | 1685.0 | 1681.9 | 1692.1 | 1683.4 |
| 177.5° | 1694.6 | 1690.6 | 1687.5 | 1696.1 | 1687.5 |
| 180° | 1692.1 | 1692.1 | 1692.1 | 1692.1 | 1692.1 |



TEST NUMBER: P923682
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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 | 8.22 | 9.07 | 9.19 | 10.05 | 11.35 | 7.79 | 8.63 | 8.76 | 9.62 | 10.92 |
| | 3H | 9.88 | 10.64 | 10.86 | 11.63 | 12.95 | 9.41 | 10.17 | 10.39 | 11.16 | 12.48 |
| | 4H | 10.47 | 11.18 | 11.46 | 12.18 | 13.51 | 9.99 | 10.71 | 10.99 | 11.71 | 13.03 |
| | 6H | 10.86 | 11.53 | 11.87 | 12.53 | 13.87 | 10.39 | 11.05 | 11.40 | 12.05 | 13.39 |
| | 8H | 10.97 | 11.60 | 11.98 | 12.62 | 13.95 | 10.49 | 11.12 | 11.51 | 12.14 | 13.48 |
| | 12H | 11.02 | 11.62 | 12.03 | 12.63 | 13.99 | 10.54 | 11.14 | 11.55 | 12.15 | 13.51 |
| 4H | 2H | 8.68 | 9.40 | 9.68 | 10.40 | 11.72 | 8.34 | 9.05 | 9.34 | 10.05 | 11.38 |
| | 3H | 10.54 | 11.14 | 11.56 | 12.17 | 13.51 | 10.15 | 10.75 | 11.16 | 11.78 | 13.12 |
| | 4H | 11.26 | 11.81 | 12.28 | 12.83 | 14.19 | 10.85 | 11.40 | 11.87 | 12.42 | 13.78 |
| | 6H | 11.77 | 12.24 | 12.80 | 13.29 | 14.65 | 11.36 | 11.84 | 12.39 | 12.88 | 14.24 |
| | 8H | 11.92 | 12.36 | 12.95 | 13.40 | 14.77 | 11.51 | 11.95 | 12.54 | 12.99 | 14.36 |
| | 12H | 11.99 | 12.39 | 13.04 | 13.44 | 14.82 | 11.57 | 11.97 | 12.62 | 13.02 | 14.40 |
| 8H | 4H | 11.45 | 11.89 | 12.48 | 12.93 | 14.30 | 11.09 | 11.53 | 12.12 | 12.57 | 13.94 |
| | 6H | 12.08 | 12.45 | 13.14 | 13.53 | 14.90 | 11.72 | 12.09 | 12.78 | 13.16 | 14.54 |
| | 8H | 12.30 | 12.63 | 13.37 | 13.69 | 15.08 | 11.94 | 12.26 | 13.00 | 13.32 | 14.71 |
| | 12H | 12.44 | 12.72 | 13.50 | 13.78 | 15.21 | 12.05 | 12.33 | 13.12 | 13.39 | 14.82 |
| 12H | 4H | 11.44 | 11.84 | 12.49 | 12.89 | 14.27 | 11.09 | 11.49 | 12.14 | 12.54 | 13.91 |
| | 6H | 12.11 | 12.44 | 13.18 | 13.50 | 14.89 | 11.76 | 12.08 | 12.82 | 13.15 | 14.54 |
| | 8H | 12.36 | 12.64 | 13.42 | 13.70 | 15.13 | 12.00 | 12.28 | 13.06 | 13.34 | 14.77 |