

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: P922782

Luminaire Tested: DFN2DIP-SQ3F0-060D040US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P922782
REPORT IS A COMBINATION OF REPORTS P899866 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-060D040US940-RLLFLL
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

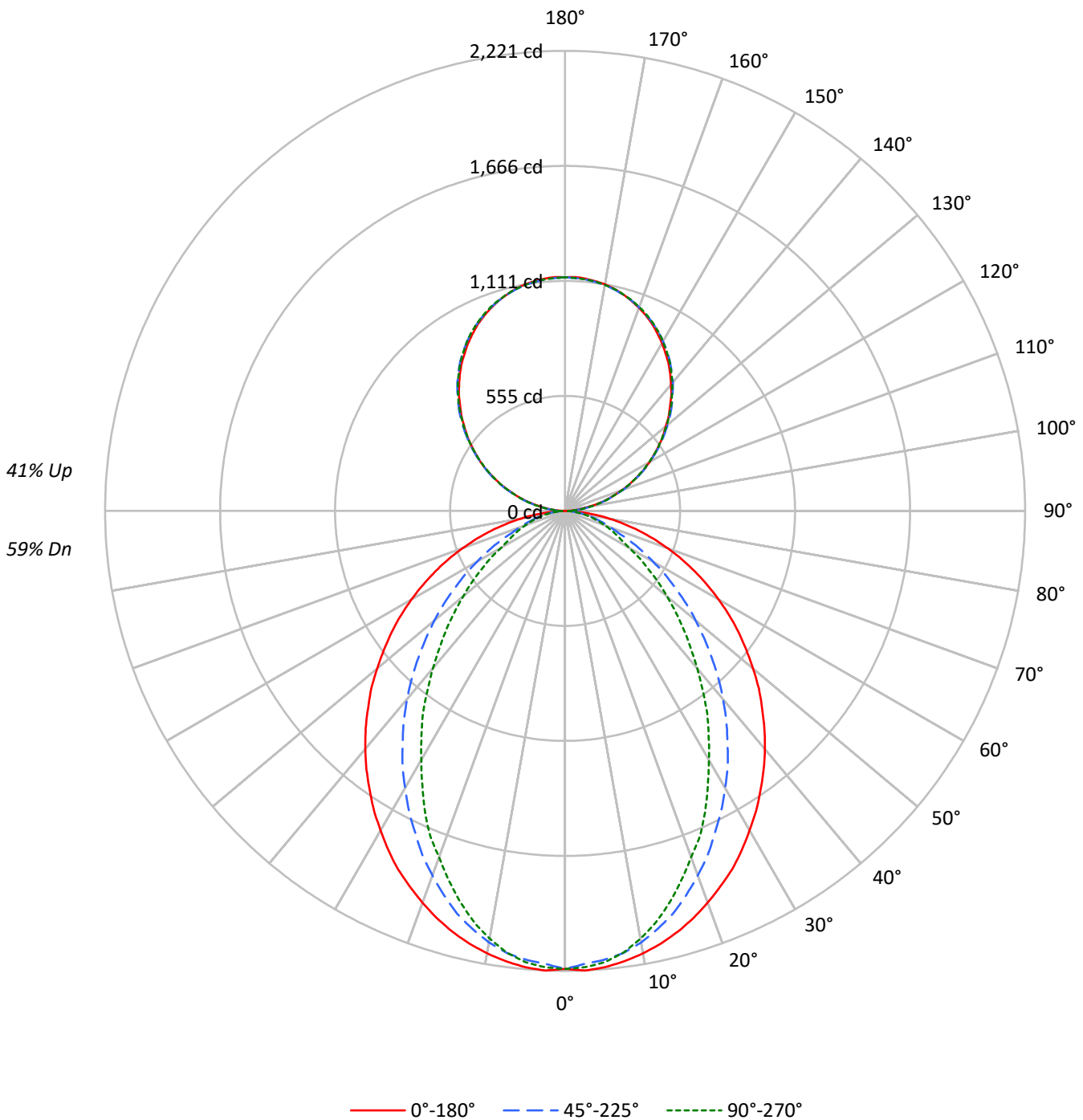
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7704.4 lumens
Efficiency: N/A
Efficacy: 92.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 83.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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 | | 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° | 2534 | 2534 | 2534 |
| 5° | 2536 | 2492 | 2509 |
| 10° | 2509 | 2441 | 2426 |
| 15° | 2473 | 2359 | 2299 |
| 20° | 2426 | 2246 | 2144 |
| 25° | 2378 | 2120 | 1994 |
| 30° | 2313 | 1991 | 1803 |
| 35° | 2250 | 1852 | 1636 |
| 40° | 2185 | 1709 | 1445 |
| 45° | 2110 | 1550 | 1272 |
| 50° | 2033 | 1390 | 1102 |
| 55° | 1952 | 1219 | 940 |
| 60° | 1858 | 1040 | 773 |
| 65° | 1750 | 859 | 695 |
| 70° | 1618 | 690 | 627 |
| 75° | 1453 | 605 | 569 |
| 80° | 1214 | 502 | 491 |
| 85° | 824 | 327 | 364 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2110 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 207.2 | 2.7 |
| 10°-20° | 568.9 | 7.4 |
| 20°-30° | 798.7 | 10.4 |
| 30°-40° | 870.7 | 11.3 |
| 40°-50° | 800.3 | 10.4 |
| 50°-60° | 628.5 | 8.2 |
| 60°-70° | 409.1 | 5.3 |
| 70°-80° | 210.6 | 2.7 |
| 80°-90° | 57.0 | 0.7 |
| 90°-100° | 69.8 | 0.9 |
| 100°-110° | 221.8 | 2.9 |
| 110°-120° | 379.5 | 4.9 |
| 120°-130° | 499.2 | 6.5 |
| 130°-140° | 560.3 | 7.3 |
| 140°-150° | 549.4 | 7.1 |
| 150°-160° | 460.9 | 6.0 |
| 160°-170° | 305.7 | 4.0 |
| 170°-180° | 106.8 | 1.4 |
| 0°-30° | 1574.9 | 20.4 |
| 0°-40° | 2445.6 | 31.7 |
| 0°-60° | 3874.3 | 50.3 |
| 0°-90° | 4550.9 | 59.1 |
| 90°-120° | 671.2 | 8.7 |
| 90°-150° | 2280.1 | 29.6 |
| 90°-180° | 3153.0 | 40.9 |
| 0°-180° | 7704.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2211 | 2211 | 2211 | 2211 | 2211 | |
| 5° | 2211 | 2201 | 2175 | 2193 | 2187 | 210 |
| 15° | 2103 | 2081 | 2013 | 1975 | 1955 | 593 |
| 25° | 1909 | 1845 | 1713 | 1631 | 1601 | 878 |
| 35° | 1645 | 1543 | 1367 | 1241 | 1197 | 1030 |
| 45° | 1345 | 1211 | 1001 | 858 | 810 | 1039 |
| 55° | 1022 | 866 | 650 | 530 | 492 | 914 |
| 65° | 690 | 528 | 348 | 280 | 274 | 685 |
| 75° | 368 | 228 | 160 | 146 | 144 | 389 |
| 85° | 86 | 44 | 38 | 38 | 38 | 99 |
| 90° | 1 | 12 | 33 | 31 | 32 | 8 |
| 95° | 50 | 59 | 61 | 61 | 59 | 55 |
| 105° | 205 | 207 | 210 | 211 | 211 | 216 |
| 115° | 381 | 386 | 385 | 384 | 381 | 377 |
| 125° | 554 | 562 | 560 | 557 | 556 | 495 |
| 135° | 717 | 727 | 729 | 728 | 725 | 554 |
| 145° | 870 | 877 | 882 | 883 | 880 | 544 |
| 155° | 995 | 998 | 1000 | 1005 | 1002 | 458 |
| 165° | 1082 | 1081 | 1081 | 1088 | 1083 | 305 |
| 175° | 1126 | 1123 | 1121 | 1128 | 1122 | 107 |
| 180° | 1128 | 1128 | 1128 | 1128 | 1128 | |



TEST NUMBER: P922782

CATALOG NUMBER: DFN2DIP-SQ3F0-060D040US940-RLFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2211.3 | 2211.3 | 2211.3 | 2211.3 | 2211.3 |
| 2.5° | 2221.3 | 2211.3 | 2189.1 | 2209.3 | 2205.3 |
| 5° | 2211.3 | 2201.3 | 2175.1 | 2193.3 | 2187.3 |
| 7.5° | 2193.3 | 2181.3 | 2153.3 | 2161.1 | 2151.2 |
| 10° | 2169.2 | 2155.2 | 2115.3 | 2109.2 | 2097.2 |
| 12.5° | 2139.3 | 2121.2 | 2067.1 | 2055.2 | 2033.1 |
| 15° | 2103.2 | 2081.1 | 2013.1 | 1975.1 | 1955.2 |
| 17.5° | 2061.2 | 2029.1 | 1945.0 | 1901.0 | 1869.0 |
| 20° | 2013.1 | 1973.0 | 1873.0 | 1823.1 | 1779.0 |
| 22.5° | 1961.1 | 1915.0 | 1798.9 | 1731.0 | 1701.0 |
| 25° | 1909.2 | 1845.0 | 1713.0 | 1631.0 | 1600.9 |
| 27.5° | 1847.2 | 1779.0 | 1632.9 | 1538.8 | 1492.8 |
| 30° | 1781.1 | 1704.9 | 1544.8 | 1442.9 | 1388.7 |
| 32.5° | 1717.0 | 1624.9 | 1461.0 | 1340.8 | 1290.7 |
| 35° | 1645.0 | 1542.9 | 1366.9 | 1240.7 | 1196.6 |
| 37.5° | 1574.9 | 1464.7 | 1278.8 | 1140.6 | 1090.7 |
| 40° | 1500.8 | 1380.9 | 1186.6 | 1044.5 | 992.6 |
| 42.5° | 1424.9 | 1296.8 | 1094.7 | 946.5 | 896.6 |
| 45° | 1344.8 | 1210.6 | 1000.7 | 858.4 | 810.4 |
| 47.5° | 1268.8 | 1126.8 | 910.6 | 768.4 | 724.4 |
| 50° | 1184.7 | 1042.7 | 822.5 | 684.3 | 642.5 |
| 52.5° | 1102.5 | 952.4 | 738.4 | 606.4 | 568.4 |
| 55° | 1022.5 | 866.5 | 650.3 | 530.4 | 492.3 |
| 57.5° | 940.6 | 780.4 | 572.4 | 460.3 | 428.2 |
| 60° | 856.5 | 696.4 | 490.3 | 388.3 | 356.2 |
| 62.5° | 774.5 | 614.5 | 420.2 | 324.2 | 308.3 |
| 65° | 690.5 | 528.2 | 348.2 | 280.3 | 274.1 |
| 67.5° | 610.4 | 448.2 | 280.3 | 246.1 | 240.1 |
| 70° | 526.3 | 370.2 | 232.0 | 212.1 | 204.0 |
| 72.5° | 446.3 | 298.1 | 194.0 | 178.2 | 174.1 |
| 75° | 368.2 | 228.0 | 160.1 | 146.1 | 144.2 |
| 77.5° | 290.3 | 162.0 | 126.1 | 118.1 | 114.0 |
| 80° | 218.0 | 116.1 | 95.9 | 88.1 | 88.1 |
| 82.5° | 152.0 | 78.1 | 66.0 | 62.0 | 62.0 |
| 85° | 86.0 | 44.0 | 38.0 | 38.0 | 38.0 |
| 87.5° | 32.1 | 16.0 | 16.0 | 14.0 | 14.0 |
| 90° | 1.0 | 12.2 | 33.3 | 31.3 | 32.3 |
| 92.5° | 21.0 | 28.5 | 29.6 | 30.6 | 30.6 |
| 95° | 49.7 | 59.2 | 60.9 | 60.9 | 59.2 |
| 97.5° | 82.7 | 91.5 | 95.2 | 95.2 | 95.2 |
| 100° | 120.7 | 128.6 | 131.3 | 131.3 | 130.3 |
| 102.5° | 160.9 | 166.7 | 170.4 | 171.4 | 170.4 |
| 105° | 204.7 | 207.4 | 209.5 | 211.2 | 211.2 |
| 107.5° | 248.3 | 252.4 | 252.4 | 253.0 | 248.3 |
| 110° | 290.4 | 295.9 | 295.9 | 295.9 | 293.2 |



TEST NUMBER: P922782

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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 336.0 | 341.8 | 340.7 | 338.0 | 336.0 |
| 115° | 380.8 | 386.4 | 384.6 | 383.6 | 380.8 |
| 117.5° | 425.4 | 432.9 | 428.2 | 425.4 | 422.8 |
| 120° | 470.4 | 477.8 | 470.4 | 470.4 | 467.3 |
| 122.5° | 511.1 | 520.7 | 515.9 | 513.2 | 511.1 |
| 125° | 554.0 | 562.5 | 559.8 | 556.7 | 555.7 |
| 127.5° | 595.8 | 606.4 | 602.6 | 598.5 | 595.8 |
| 130° | 634.9 | 647.2 | 645.5 | 643.5 | 639.7 |
| 132.5° | 678.8 | 688.3 | 689.0 | 684.2 | 681.5 |
| 135° | 716.6 | 727.1 | 729.2 | 728.1 | 725.4 |
| 137.5° | 758.8 | 767.2 | 768.9 | 768.2 | 764.2 |
| 140° | 795.8 | 804.3 | 809.0 | 809.0 | 805.3 |
| 142.5° | 833.9 | 842.4 | 845.1 | 846.1 | 842.4 |
| 145° | 870.0 | 876.7 | 882.2 | 883.2 | 879.5 |
| 147.5° | 902.2 | 910.7 | 914.8 | 916.5 | 912.8 |
| 150° | 935.6 | 941.4 | 945.1 | 948.2 | 945.1 |
| 152.5° | 965.2 | 970.9 | 975.7 | 979.5 | 975.7 |
| 155° | 994.7 | 997.5 | 1000.5 | 1005.3 | 1002.2 |
| 157.5° | 1020.3 | 1022.3 | 1024.0 | 1030.8 | 1026.0 |
| 160° | 1043.0 | 1045.1 | 1046.1 | 1051.9 | 1047.8 |
| 162.5° | 1064.1 | 1064.1 | 1065.1 | 1071.6 | 1066.8 |
| 165° | 1082.2 | 1081.1 | 1081.1 | 1087.9 | 1083.2 |
| 167.5° | 1098.5 | 1095.4 | 1095.4 | 1102.2 | 1097.4 |
| 170° | 1110.7 | 1108.0 | 1107.0 | 1113.7 | 1108.0 |
| 172.5° | 1119.2 | 1116.5 | 1115.4 | 1122.3 | 1116.5 |
| 175° | 1126.1 | 1123.3 | 1121.2 | 1128.0 | 1122.3 |
| 177.5° | 1129.8 | 1127.0 | 1125.0 | 1130.8 | 1125.0 |
| 180° | 1128.0 | 1128.0 | 1128.0 | 1128.0 | 1128.0 |



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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 | 11.15 | 12.06 | 12.03 | 12.96 | 14.10 | 7.11 | 8.02 | 7.99 | 8.92 | 10.06 |
| | 3H | 12.83 | 13.64 | 13.72 | 14.55 | 15.71 | 8.30 | 9.11 | 9.19 | 10.02 | 11.18 |
| | 4H | 13.44 | 14.21 | 14.35 | 15.12 | 16.29 | 8.75 | 9.52 | 9.66 | 10.43 | 11.60 |
| | 6H | 13.86 | 14.57 | 14.78 | 15.49 | 16.67 | 9.07 | 9.77 | 9.99 | 10.69 | 11.88 |
| | 8H | 13.99 | 14.66 | 14.92 | 15.60 | 16.78 | 9.16 | 9.83 | 10.09 | 10.77 | 11.95 |
| | 12H | 14.05 | 14.69 | 14.98 | 15.62 | 16.83 | 9.20 | 9.84 | 10.13 | 10.77 | 11.98 |
| 4H | 2H | 11.17 | 11.94 | 12.09 | 12.86 | 14.03 | 7.71 | 8.48 | 8.63 | 9.39 | 10.57 |
| | 3H | 13.01 | 13.64 | 13.93 | 14.59 | 15.78 | 9.06 | 9.70 | 9.99 | 10.65 | 11.83 |
| | 4H | 13.70 | 14.28 | 14.63 | 15.22 | 16.43 | 9.61 | 10.19 | 10.54 | 11.13 | 12.34 |
| | 6H | 14.21 | 14.71 | 15.16 | 15.68 | 16.89 | 10.03 | 10.53 | 10.97 | 11.49 | 12.70 |
| | 8H | 14.39 | 14.85 | 15.34 | 15.81 | 17.04 | 10.15 | 10.62 | 11.10 | 11.58 | 12.80 |
| | 12H | 14.48 | 14.90 | 15.45 | 15.88 | 17.11 | 10.22 | 10.64 | 11.19 | 11.61 | 12.84 |
| 8H | 4H | 13.67 | 14.14 | 14.62 | 15.09 | 16.32 | 9.89 | 10.36 | 10.84 | 11.32 | 12.54 |
| | 6H | 14.23 | 14.62 | 15.21 | 15.62 | 16.84 | 10.40 | 10.79 | 11.38 | 11.79 | 13.02 |
| | 8H | 14.45 | 14.79 | 15.43 | 15.78 | 17.02 | 10.59 | 10.93 | 11.58 | 11.92 | 13.16 |
| | 12H | 14.59 | 14.89 | 15.57 | 15.87 | 17.16 | 10.71 | 11.01 | 11.70 | 11.99 | 13.28 |
| 12H | 4H | 13.62 | 14.05 | 14.60 | 15.02 | 16.25 | 9.90 | 10.32 | 10.87 | 11.29 | 12.53 |
| | 6H | 14.21 | 14.55 | 15.19 | 15.54 | 16.78 | 10.45 | 10.79 | 11.44 | 11.78 | 13.03 |
| | 8H | 14.43 | 14.73 | 15.42 | 15.71 | 17.00 | 10.66 | 10.96 | 11.65 | 11.94 | 13.23 |