

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: P917211

Luminaire Tested: DFN2DIP-SQ2F0-070D040US930-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917211
REPORT IS A COMBINATION OF REPORTS P901312 AND P898215
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ2F0-070D040US930-RLLONL
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

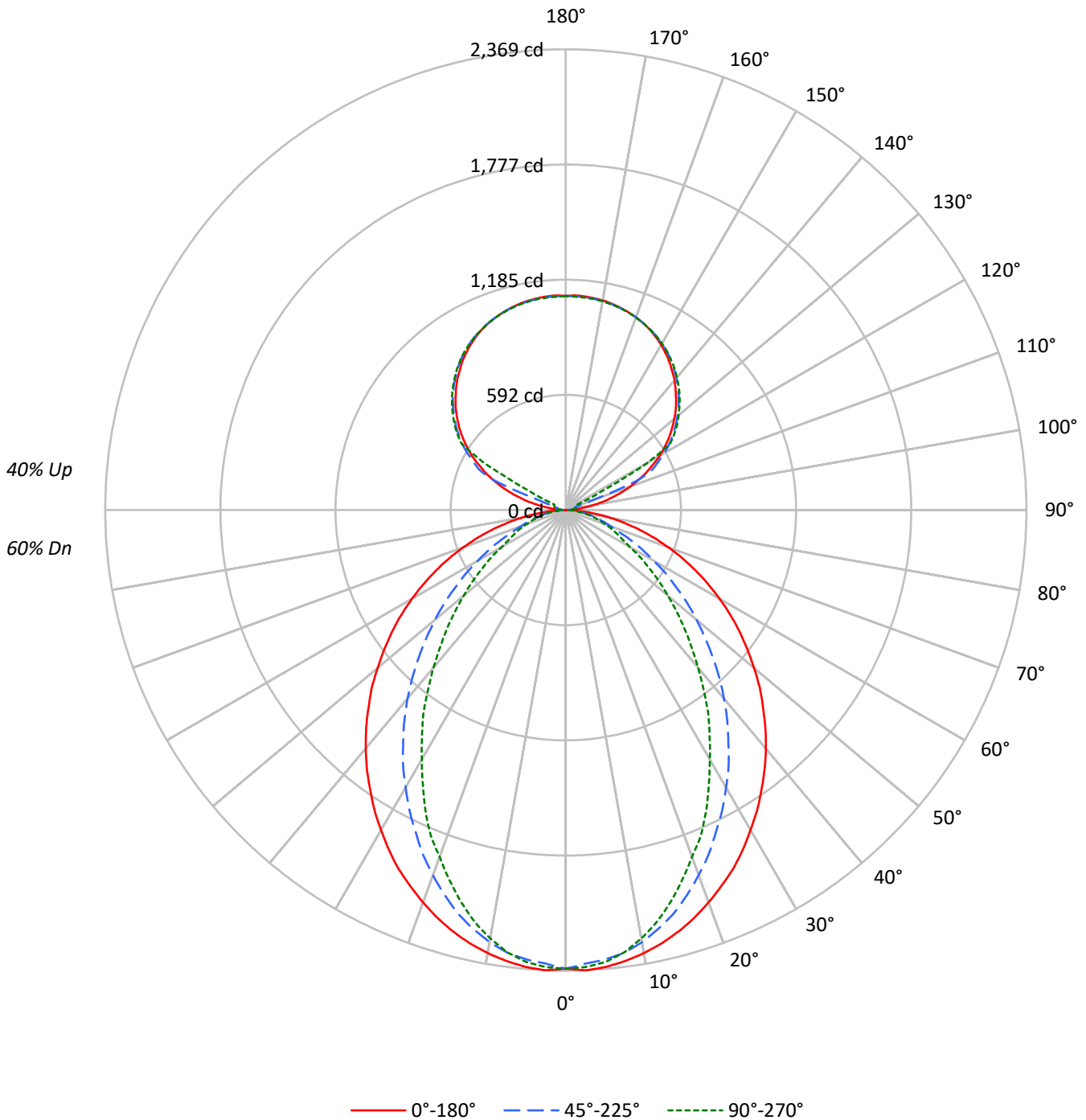
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8079.5 lumens
Efficiency: N/A
Efficacy: 83.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 97.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9977
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 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 110 | 110 | 110 | 110 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 77 | 77 | 77 | 65 | 65 | 65 | 60 | | | |
| 1 | 101 | 96 | 93 | 89 | 94 | 90 | 87 | 84 | 79 | 77 | 74 | 68 | 67 | 65 | 59 | 57 | 56 | 52 | | | |
| 2 | 92 | 85 | 79 | 74 | 86 | 80 | 74 | 70 | 70 | 66 | 62 | 61 | 58 | 55 | 52 | 50 | 48 | 44 | | | |
| 3 | 84 | 75 | 68 | 62 | 79 | 71 | 64 | 59 | 62 | 57 | 53 | 54 | 51 | 47 | 47 | 44 | 42 | 38 | | | |
| 4 | 78 | 67 | 59 | 53 | 72 | 63 | 56 | 51 | 56 | 50 | 46 | 49 | 45 | 41 | 42 | 39 | 37 | 33 | | | |
| 5 | 71 | 60 | 52 | 46 | 67 | 57 | 49 | 44 | 50 | 44 | 40 | 44 | 40 | 36 | 38 | 35 | 32 | 29 | | | |
| 6 | 66 | 54 | 46 | 40 | 62 | 51 | 44 | 39 | 45 | 40 | 35 | 40 | 35 | 32 | 35 | 32 | 29 | 26 | | | |
| 7 | 61 | 49 | 41 | 36 | 57 | 46 | 39 | 34 | 41 | 36 | 31 | 37 | 32 | 29 | 32 | 29 | 26 | 23 | | | |
| 8 | 57 | 45 | 37 | 32 | 53 | 42 | 35 | 31 | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 | 21 | | | |
| 9 | 53 | 41 | 34 | 29 | 50 | 39 | 32 | 28 | 35 | 29 | 25 | 31 | 27 | 23 | 28 | 24 | 21 | 19 | | | |
| 10 | 50 | 38 | 31 | 26 | 47 | 36 | 29 | 25 | 32 | 27 | 23 | 29 | 24 | 21 | 26 | 22 | 19 | 17 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 5187 | 5187 | 5187 |
| 5° | 5186 | 5093 | 5130 |
| 10° | 5126 | 4982 | 4956 |
| 15° | 5046 | 4806 | 4691 |
| 20° | 4944 | 4569 | 4369 |
| 25° | 4839 | 4305 | 4057 |
| 30° | 4701 | 4035 | 3666 |
| 35° | 4566 | 3746 | 3321 |
| 40° | 4427 | 3448 | 2928 |
| 45° | 4268 | 3120 | 2572 |
| 50° | 4102 | 2789 | 2224 |
| 55° | 3928 | 2437 | 1891 |
| 60° | 3726 | 2070 | 1550 |
| 65° | 3493 | 1699 | 1387 |
| 70° | 3211 | 1354 | 1244 |
| 75° | 2855 | 1171 | 1118 |
| 80° | 2344 | 952 | 947 |
| 85° | 1525 | 590 | 674 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4268 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 221.1 | 2.7 |
| 10°-20° | 606.9 | 7.5 |
| 20°-30° | 852.0 | 10.5 |
| 30°-40° | 928.8 | 11.5 |
| 40°-50° | 853.6 | 10.6 |
| 50°-60° | 670.4 | 8.3 |
| 60°-70° | 436.4 | 5.4 |
| 70°-80° | 224.6 | 2.8 |
| 80°-90° | 59.3 | 0.7 |
| 90°-100° | 36.3 | 0.4 |
| 100°-110° | 135.3 | 1.7 |
| 110°-120° | 358.8 | 4.4 |
| 120°-130° | 595.1 | 7.4 |
| 130°-140° | 632.1 | 7.8 |
| 140°-150° | 587.5 | 7.3 |
| 150°-160° | 472.3 | 5.8 |
| 160°-170° | 304.4 | 3.8 |
| 170°-180° | 104.8 | 1.3 |
| 0°-30° | 1679.9 | 20.8 |
| 0°-40° | 2608.7 | 32.3 |
| 0°-60° | 4132.7 | 51.2 |
| 0°-90° | 4852.9 | 60.1 |
| 90°-120° | 530.4 | 6.6 |
| 90°-150° | 2345.2 | 29.0 |
| 90°-180° | 3227.0 | 39.9 |
| 0°-180° | 8079.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2359 | 2359 | 2359 | 2359 | 2359 | |
| 5° | 2359 | 2348 | 2320 | 2340 | 2333 | 224 |
| 15° | 2244 | 2220 | 2147 | 2107 | 2086 | 632 |
| 25° | 2036 | 1968 | 1827 | 1740 | 1708 | 937 |
| 35° | 1755 | 1646 | 1458 | 1324 | 1276 | 1098 |
| 45° | 1434 | 1291 | 1067 | 916 | 864 | 1108 |
| 55° | 1091 | 924 | 694 | 566 | 525 | 975 |
| 65° | 736 | 564 | 371 | 299 | 292 | 730 |
| 75° | 393 | 243 | 171 | 156 | 154 | 415 |
| 85° | 92 | 47 | 40 | 40 | 40 | 105 |
| 90° | 1 | 10 | 16 | 20 | 21 | 8 |
| 95° | 52 | 25 | 31 | 35 | 34 | 61 |
| 105° | 242 | 266 | 49 | 57 | 60 | 259 |
| 115° | 458 | 471 | 491 | 123 | 65 | 451 |
| 125° | 647 | 658 | 673 | 679 | 681 | 577 |
| 135° | 801 | 814 | 821 | 829 | 828 | 619 |
| 145° | 929 | 929 | 942 | 948 | 944 | 581 |
| 155° | 1023 | 1016 | 1026 | 1030 | 1024 | 472 |
| 165° | 1078 | 1074 | 1076 | 1082 | 1076 | 305 |
| 175° | 1103 | 1097 | 1099 | 1105 | 1097 | 105 |
| 180° | 1101 | 1101 | 1101 | 1101 | 1101 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2358.7 | 2358.7 | 2358.7 | 2358.7 | 2358.7 |
| 2.5° | 2369.3 | 2358.7 | 2335.2 | 2356.7 | 2352.4 |
| 5° | 2358.7 | 2348.1 | 2320.3 | 2339.5 | 2333.1 |
| 7.5° | 2339.5 | 2326.8 | 2296.9 | 2305.3 | 2294.7 |
| 10° | 2313.9 | 2299.0 | 2256.3 | 2249.8 | 2237.1 |
| 12.5° | 2281.9 | 2262.7 | 2205.0 | 2192.3 | 2168.7 |
| 15° | 2243.5 | 2219.9 | 2147.4 | 2106.9 | 2085.6 |
| 17.5° | 2198.6 | 2164.5 | 2074.8 | 2027.8 | 1993.6 |
| 20° | 2147.4 | 2104.6 | 1998.0 | 1944.7 | 1897.6 |
| 22.5° | 2092.0 | 2042.8 | 1918.9 | 1846.4 | 1814.5 |
| 25° | 2036.5 | 1968.0 | 1827.2 | 1739.8 | 1707.6 |
| 27.5° | 1970.3 | 1897.6 | 1741.8 | 1641.5 | 1592.4 |
| 30° | 1899.9 | 1818.6 | 1647.8 | 1539.1 | 1481.4 |
| 32.5° | 1831.5 | 1733.2 | 1558.4 | 1430.2 | 1376.7 |
| 35° | 1754.7 | 1645.8 | 1458.1 | 1323.6 | 1276.4 |
| 37.5° | 1680.0 | 1562.4 | 1364.1 | 1216.6 | 1163.4 |
| 40° | 1600.9 | 1473.0 | 1265.8 | 1114.3 | 1058.7 |
| 42.5° | 1519.9 | 1383.3 | 1167.7 | 1009.6 | 956.4 |
| 45° | 1434.5 | 1291.4 | 1067.4 | 915.7 | 864.5 |
| 47.5° | 1353.4 | 1201.9 | 971.3 | 819.6 | 772.7 |
| 50° | 1263.7 | 1112.2 | 877.3 | 729.9 | 685.3 |
| 52.5° | 1176.1 | 1015.9 | 787.7 | 646.8 | 606.3 |
| 55° | 1090.7 | 924.2 | 693.7 | 565.7 | 525.2 |
| 57.5° | 1003.3 | 832.5 | 610.6 | 491.0 | 456.8 |
| 60° | 913.6 | 742.8 | 522.9 | 414.3 | 380.0 |
| 62.5° | 826.1 | 655.4 | 448.2 | 345.8 | 328.8 |
| 65° | 736.5 | 563.5 | 371.4 | 299.0 | 292.4 |
| 67.5° | 651.1 | 478.1 | 299.0 | 262.4 | 256.2 |
| 70° | 561.4 | 394.9 | 247.5 | 226.2 | 217.6 |
| 72.5° | 476.1 | 318.0 | 207.0 | 190.0 | 185.7 |
| 75° | 392.7 | 243.2 | 170.7 | 155.8 | 153.8 |
| 77.5° | 309.6 | 172.8 | 134.5 | 125.9 | 121.6 |
| 80° | 232.6 | 123.8 | 102.4 | 94.0 | 94.0 |
| 82.5° | 162.2 | 83.3 | 70.4 | 66.1 | 66.1 |
| 85° | 91.7 | 46.9 | 40.5 | 40.5 | 40.5 |
| 87.5° | 34.2 | 17.0 | 17.0 | 14.9 | 14.9 |
| 90° | 0.7 | 9.5 | 15.9 | 20.0 | 21.4 |
| 92.5° | 20.0 | 16.7 | 19.1 | 20.7 | 21.4 |
| 95° | 51.7 | 25.4 | 31.0 | 35.1 | 34.2 |
| 97.5° | 93.2 | 27.9 | 40.6 | 43.0 | 43.8 |
| 100° | 141.0 | 31.9 | 45.4 | 51.7 | 53.3 |
| 102.5° | 193.5 | 192.0 | 47.0 | 55.7 | 58.1 |
| 105° | 242.1 | 266.0 | 48.6 | 57.3 | 60.5 |
| 107.5° | 298.6 | 318.5 | 50.2 | 58.9 | 62.1 |
| 110° | 352.9 | 369.5 | 139.4 | 59.8 | 62.9 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 403.8 | 418.1 | 404.6 | 61.3 | 63.8 |
| 115° | 457.9 | 471.4 | 491.4 | 122.6 | 65.4 |
| 117.5° | 504.9 | 520.8 | 534.4 | 420.4 | 211.8 |
| 120° | 557.5 | 569.4 | 583.8 | 593.4 | 485.8 |
| 122.5° | 602.0 | 614.8 | 630.8 | 635.5 | 636.3 |
| 125° | 647.4 | 657.9 | 672.9 | 678.6 | 680.9 |
| 127.5° | 688.8 | 700.0 | 712.0 | 720.0 | 720.7 |
| 130° | 727.9 | 740.7 | 749.3 | 758.1 | 757.4 |
| 132.5° | 767.7 | 778.1 | 786.8 | 794.0 | 793.3 |
| 135° | 801.2 | 814.0 | 821.1 | 829.1 | 827.5 |
| 137.5° | 836.2 | 845.7 | 853.8 | 861.7 | 859.3 |
| 140° | 870.4 | 876.9 | 885.6 | 892.8 | 888.8 |
| 142.5° | 899.2 | 904.7 | 915.1 | 921.4 | 917.5 |
| 145° | 929.4 | 928.6 | 942.1 | 947.7 | 943.7 |
| 147.5° | 955.6 | 953.2 | 966.8 | 970.8 | 967.7 |
| 150° | 981.1 | 975.6 | 988.4 | 993.1 | 989.1 |
| 152.5° | 1002.7 | 996.3 | 1008.2 | 1013.0 | 1007.5 |
| 155° | 1023.4 | 1016.3 | 1025.8 | 1030.5 | 1024.2 |
| 157.5° | 1040.1 | 1033.7 | 1041.0 | 1046.5 | 1040.1 |
| 160° | 1054.4 | 1049.6 | 1054.4 | 1059.2 | 1053.6 |
| 162.5° | 1067.1 | 1062.4 | 1066.4 | 1072.0 | 1064.8 |
| 165° | 1078.3 | 1073.6 | 1075.9 | 1081.5 | 1075.9 |
| 167.5° | 1087.1 | 1082.2 | 1084.8 | 1090.3 | 1083.1 |
| 170° | 1094.3 | 1089.5 | 1091.0 | 1096.7 | 1089.5 |
| 172.5° | 1099.0 | 1094.3 | 1095.9 | 1101.5 | 1094.3 |
| 175° | 1102.9 | 1097.4 | 1099.0 | 1104.6 | 1096.7 |
| 177.5° | 1104.6 | 1099.0 | 1099.8 | 1105.5 | 1098.3 |
| 180° | 1100.7 | 1100.7 | 1100.7 | 1100.7 | 1100.7 |



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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 | 13.64 | 14.56 | 14.51 | 15.45 | 16.57 | 9.60 | 10.52 | 10.48 | 11.41 | 12.53 |
| | 3H | 15.31 | 16.13 | 16.19 | 17.03 | 18.18 | 10.78 | 11.60 | 11.67 | 12.50 | 13.65 |
| | 4H | 15.91 | 16.68 | 16.81 | 17.59 | 18.75 | 11.22 | 12.00 | 12.12 | 12.90 | 14.06 |
| | 6H | 16.32 | 17.03 | 17.23 | 17.94 | 19.11 | 11.53 | 12.25 | 12.44 | 13.16 | 14.33 |
| | 8H | 16.44 | 17.12 | 17.36 | 18.05 | 19.22 | 11.62 | 12.30 | 12.54 | 13.22 | 14.39 |
| | 12H | 16.49 | 17.14 | 17.42 | 18.06 | 19.26 | 11.65 | 12.30 | 12.58 | 13.22 | 14.42 |
| 4H | 2H | 13.67 | 14.44 | 14.57 | 15.35 | 16.51 | 10.20 | 10.98 | 11.11 | 11.88 | 13.04 |
| | 3H | 15.48 | 16.13 | 16.40 | 17.06 | 18.24 | 11.54 | 12.18 | 12.45 | 13.12 | 14.29 |
| | 4H | 16.16 | 16.75 | 17.09 | 17.68 | 18.88 | 12.07 | 12.66 | 13.00 | 13.59 | 14.79 |
| | 6H | 16.66 | 17.17 | 17.60 | 18.12 | 19.32 | 12.48 | 12.98 | 13.42 | 13.94 | 15.14 |
| | 8H | 16.83 | 17.30 | 17.77 | 18.25 | 19.46 | 12.60 | 13.07 | 13.54 | 14.02 | 15.23 |
| | 12H | 16.92 | 17.34 | 17.88 | 18.31 | 19.53 | 12.65 | 13.08 | 13.62 | 14.05 | 15.26 |
| 8H | 4H | 16.13 | 16.60 | 17.07 | 17.55 | 18.77 | 12.35 | 12.82 | 13.29 | 13.77 | 14.98 |
| | 6H | 16.68 | 17.07 | 17.65 | 18.06 | 19.27 | 12.84 | 13.23 | 13.81 | 14.22 | 15.44 |
| | 8H | 16.88 | 17.23 | 17.86 | 18.21 | 19.44 | 13.02 | 13.37 | 14.00 | 14.35 | 15.58 |
| | 12H | 17.01 | 17.31 | 17.99 | 18.29 | 19.57 | 13.13 | 13.43 | 14.11 | 14.41 | 15.68 |
| 12H | 4H | 16.09 | 16.51 | 17.05 | 17.48 | 18.70 | 12.35 | 12.78 | 13.31 | 13.74 | 14.96 |
| | 6H | 16.65 | 17.00 | 17.63 | 17.98 | 19.21 | 12.89 | 13.23 | 13.87 | 14.21 | 15.44 |
| | 8H | 16.86 | 17.17 | 17.84 | 18.14 | 19.42 | 13.09 | 13.39 | 14.07 | 14.36 | 15.64 |