

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: P917137

Luminaire Tested: DFN2DIP-SQ2F0-040D040US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917137
REPORT IS A COMBINATION OF REPORTS P901305 AND P898215
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ2F0-040D040US930-FLONL
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

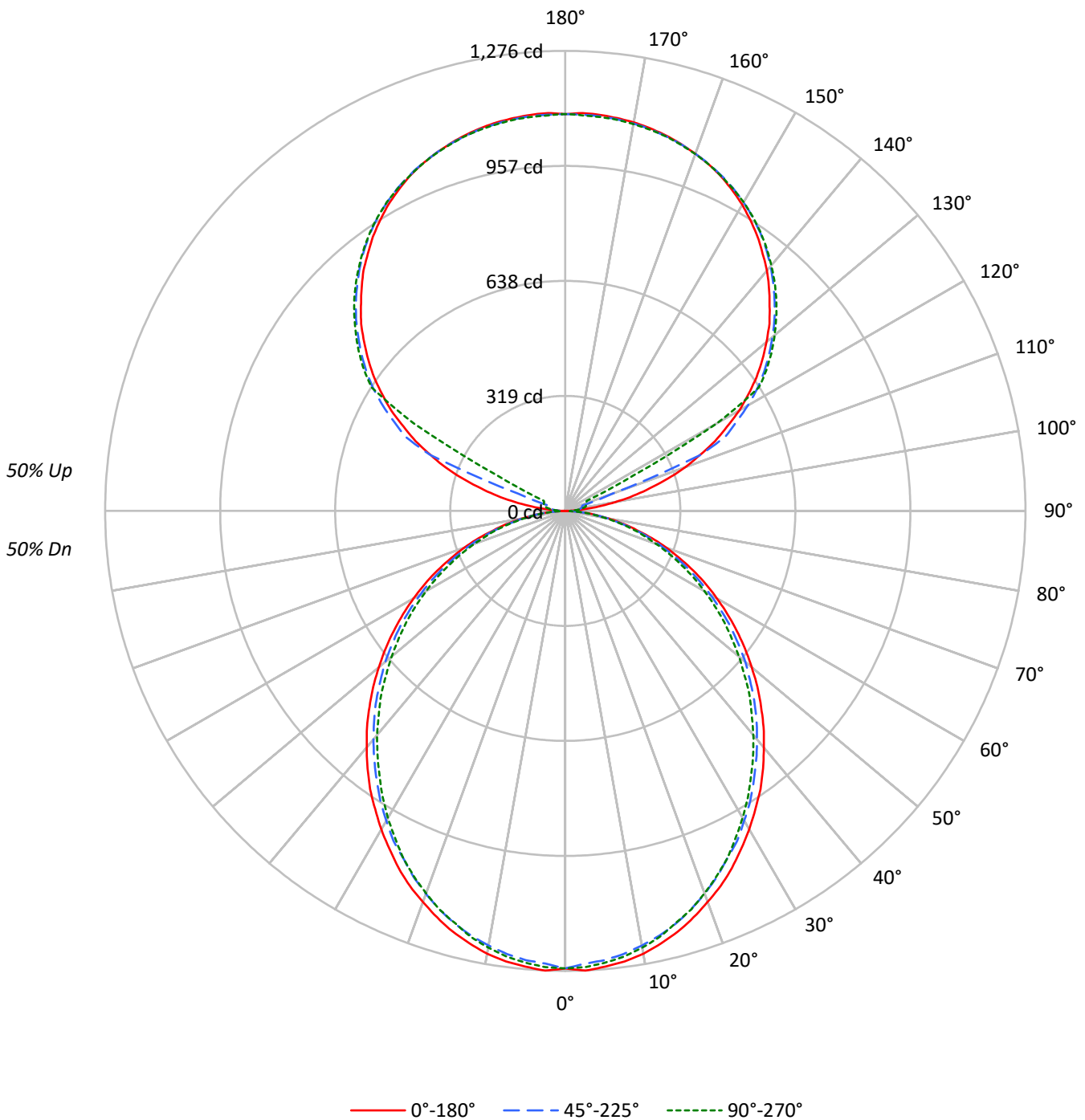
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6457.1 lumens
Efficiency: N/A
Efficacy: 102.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 63.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9952
Total Harmonic Distortion (THDi): 0.069
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 | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 | 56 | 56 | 56 |
| 1 | 98 | 93 | 90 | 86 | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 | 47 | 47 | 42 |
| 2 | 89 | 82 | 75 | 70 | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 | 40 | 40 | 35 |
| 3 | 81 | 72 | 64 | 59 | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 | 34 | 34 | 30 |
| 4 | 74 | 64 | 56 | 50 | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 | 29 | 29 | 26 |
| 5 | 68 | 57 | 48 | 42 | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 | 26 | 26 | 22 |
| 6 | 63 | 51 | 43 | 37 | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 | 23 | 23 | 20 |
| 7 | 58 | 46 | 38 | 32 | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 | 20 | 20 | 17 |
| 8 | 54 | 42 | 34 | 29 | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 | 18 | 18 | 16 |
| 9 | 50 | 38 | 30 | 25 | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 | 16 | 16 | 14 |
| 10 | 47 | 35 | 28 | 23 | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 | 15 | 15 | 13 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2790 | 2790 | 2790 |
| 5° | 2790 | 2745 | 2766 |
| 10° | 2763 | 2702 | 2725 |
| 15° | 2717 | 2652 | 2662 |
| 20° | 2657 | 2584 | 2599 |
| 25° | 2598 | 2504 | 2525 |
| 30° | 2524 | 2429 | 2434 |
| 35° | 2454 | 2342 | 2337 |
| 40° | 2369 | 2254 | 2244 |
| 45° | 2283 | 2165 | 2149 |
| 50° | 2190 | 2071 | 2040 |
| 55° | 2092 | 1963 | 1938 |
| 60° | 1981 | 1836 | 1821 |
| 65° | 1858 | 1703 | 1684 |
| 70° | 1703 | 1541 | 1536 |
| 75° | 1490 | 1347 | 1393 |
| 80° | 1231 | 1099 | 1132 |
| 85° | 832 | 694 | 710 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2283 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 119.4 | 1.8 |
| 10°-20° | 336.0 | 5.2 |
| 20°-30° | 493.8 | 7.6 |
| 30°-40° | 573.6 | 8.9 |
| 40°-50° | 572.9 | 8.9 |
| 50°-60° | 499.5 | 7.7 |
| 60°-70° | 369.3 | 5.7 |
| 70°-80° | 208.9 | 3.2 |
| 80°-90° | 57.1 | 0.9 |
| 90°-100° | 36.3 | 0.6 |
| 100°-110° | 135.3 | 2.1 |
| 110°-120° | 358.8 | 5.6 |
| 120°-130° | 595.1 | 9.2 |
| 130°-140° | 632.1 | 9.8 |
| 140°-150° | 587.5 | 9.1 |
| 150°-160° | 472.3 | 7.3 |
| 160°-170° | 304.4 | 4.7 |
| 170°-180° | 104.8 | 1.6 |
| 0°-30° | 949.3 | 14.7 |
| 0°-40° | 1522.9 | 23.6 |
| 0°-60° | 2595.3 | 40.2 |
| 0°-90° | 3230.5 | 50.0 |
| 90°-120° | 530.4 | 8.2 |
| 90°-150° | 2345.2 | 36.3 |
| 90°-180° | 3227.0 | 50.0 |
| 0°-180° | 6457.1 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1269 | 1269 | 1269 | 1269 | 1269 | |
| 5° | 1269 | 1264 | 1251 | 1260 | 1258 | 120 |
| 15° | 1208 | 1201 | 1185 | 1190 | 1184 | 340 |
| 25° | 1093 | 1084 | 1063 | 1065 | 1063 | 503 |
| 35° | 943 | 931 | 912 | 904 | 898 | 589 |
| 45° | 768 | 759 | 741 | 727 | 722 | 592 |
| 55° | 581 | 574 | 559 | 544 | 538 | 519 |
| 65° | 392 | 384 | 372 | 361 | 355 | 387 |
| 75° | 205 | 203 | 196 | 189 | 192 | 219 |
| 85° | 50 | 49 | 48 | 44 | 43 | 56 |
| 90° | 1 | 10 | 16 | 20 | 21 | 6 |
| 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 | |



TEST NUMBER: P917137

CATALOG NUMBER: DFN2DIP-SQ2F0-040D040US930-FLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1268.9 | 1268.9 | 1268.9 | 1268.9 | 1268.9 |
| 2.5° | 1276.3 | 1270.2 | 1256.8 | 1268.9 | 1266.6 |
| 5° | 1268.9 | 1264.1 | 1250.7 | 1260.4 | 1258.1 |
| 7.5° | 1260.4 | 1253.1 | 1239.7 | 1249.5 | 1247.1 |
| 10° | 1247.1 | 1238.5 | 1223.9 | 1233.6 | 1230.0 |
| 12.5° | 1228.7 | 1221.4 | 1206.8 | 1212.9 | 1210.4 |
| 15° | 1207.9 | 1200.7 | 1184.8 | 1189.7 | 1183.6 |
| 17.5° | 1182.3 | 1175.1 | 1159.2 | 1165.2 | 1159.2 |
| 20° | 1154.2 | 1147.0 | 1129.9 | 1133.5 | 1128.8 |
| 22.5° | 1126.3 | 1115.2 | 1099.3 | 1099.3 | 1096.9 |
| 25° | 1093.2 | 1083.5 | 1062.8 | 1065.2 | 1062.8 |
| 27.5° | 1056.6 | 1048.1 | 1032.3 | 1028.7 | 1022.6 |
| 30° | 1020.1 | 1010.3 | 992.1 | 988.4 | 983.5 |
| 32.5° | 981.0 | 973.8 | 954.2 | 946.9 | 941.9 |
| 35° | 943.2 | 931.1 | 911.5 | 904.2 | 898.1 |
| 37.5° | 900.5 | 889.5 | 869.9 | 861.4 | 855.3 |
| 40° | 856.6 | 846.8 | 827.2 | 816.4 | 811.5 |
| 42.5° | 813.9 | 804.0 | 784.6 | 772.3 | 765.1 |
| 45° | 767.5 | 759.0 | 740.6 | 727.3 | 722.4 |
| 47.5° | 722.4 | 713.8 | 694.3 | 680.9 | 673.6 |
| 50° | 674.7 | 668.6 | 651.6 | 634.5 | 628.4 |
| 52.5° | 628.4 | 619.9 | 604.1 | 590.6 | 582.0 |
| 55° | 580.9 | 573.5 | 558.9 | 544.2 | 538.2 |
| 57.5° | 533.2 | 527.2 | 511.2 | 496.6 | 491.7 |
| 60° | 485.6 | 480.8 | 463.7 | 450.3 | 446.6 |
| 62.5° | 439.3 | 430.7 | 418.6 | 406.3 | 401.5 |
| 65° | 391.8 | 384.3 | 372.2 | 361.2 | 355.1 |
| 67.5° | 342.9 | 336.7 | 325.9 | 317.3 | 312.4 |
| 70° | 297.7 | 292.9 | 281.8 | 273.3 | 268.5 |
| 72.5° | 251.4 | 246.5 | 240.4 | 231.9 | 228.2 |
| 75° | 205.0 | 202.6 | 196.4 | 189.1 | 191.6 |
| 77.5° | 163.5 | 158.6 | 156.1 | 152.5 | 148.9 |
| 80° | 122.1 | 120.7 | 118.3 | 114.7 | 112.3 |
| 82.5° | 83.0 | 83.0 | 81.9 | 76.9 | 76.9 |
| 85° | 50.0 | 48.8 | 47.6 | 43.9 | 42.7 |
| 87.5° | 22.0 | 19.6 | 17.1 | 13.5 | 12.1 |
| 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 | 10.73 | 11.59 | 11.68 | 12.56 | 13.83 | 10.28 | 11.14 | 11.24 | 12.11 | 13.39 |
| | 3H | 12.37 | 13.14 | 13.33 | 14.12 | 15.41 | 11.88 | 12.65 | 12.84 | 13.63 | 14.92 |
| | 4H | 12.94 | 13.67 | 13.92 | 14.66 | 15.96 | 12.45 | 13.18 | 13.43 | 14.16 | 15.47 |
| | 6H | 13.33 | 14.00 | 14.32 | 14.99 | 16.30 | 12.83 | 13.50 | 13.82 | 14.49 | 15.80 |
| | 8H | 13.42 | 14.06 | 14.42 | 15.07 | 16.38 | 12.92 | 13.56 | 13.92 | 14.57 | 15.88 |
| | 12H | 13.46 | 14.07 | 14.47 | 15.08 | 16.41 | 12.96 | 13.57 | 13.96 | 14.57 | 15.90 |
| 4H | 2H | 11.18 | 11.91 | 12.16 | 12.89 | 14.19 | 10.82 | 11.55 | 11.81 | 12.54 | 13.84 |
| | 3H | 13.02 | 13.63 | 14.02 | 14.64 | 15.96 | 12.61 | 13.22 | 13.61 | 14.24 | 15.55 |
| | 4H | 13.72 | 14.28 | 14.72 | 15.28 | 16.62 | 13.29 | 13.85 | 14.30 | 14.86 | 16.20 |
| | 6H | 14.21 | 14.69 | 15.23 | 15.73 | 17.06 | 13.78 | 14.26 | 14.80 | 15.29 | 16.63 |
| | 8H | 14.35 | 14.80 | 15.37 | 15.83 | 17.18 | 13.92 | 14.37 | 14.94 | 15.39 | 16.74 |
| | 12H | 14.42 | 14.82 | 15.45 | 15.86 | 17.22 | 13.97 | 14.38 | 15.01 | 15.41 | 16.77 |
| 8H | 4H | 13.90 | 14.35 | 14.92 | 15.38 | 16.73 | 13.52 | 13.97 | 14.54 | 15.00 | 16.35 |
| | 6H | 14.51 | 14.88 | 15.55 | 15.95 | 17.30 | 14.12 | 14.50 | 15.17 | 15.56 | 16.91 |
| | 8H | 14.72 | 15.04 | 15.77 | 16.10 | 17.46 | 14.32 | 14.65 | 15.37 | 15.70 | 17.07 |
| | 12H | 14.84 | 15.12 | 15.89 | 16.17 | 17.58 | 14.43 | 14.71 | 15.48 | 15.76 | 17.17 |
| 12H | 4H | 13.89 | 14.29 | 14.92 | 15.33 | 16.69 | 13.52 | 13.92 | 14.55 | 14.96 | 16.32 |
| | 6H | 14.53 | 14.86 | 15.58 | 15.91 | 17.28 | 14.16 | 14.49 | 15.21 | 15.54 | 16.91 |
| | 8H | 14.76 | 15.05 | 15.82 | 16.09 | 17.51 | 14.38 | 14.67 | 15.43 | 15.71 | 17.12 |