

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: P922932

Luminaire Tested: DFN2DIP-SQ3F0-100D060US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P922932
REPORT IS A COMBINATION OF REPORTS P899909 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-100D060US940-FLLFLL
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

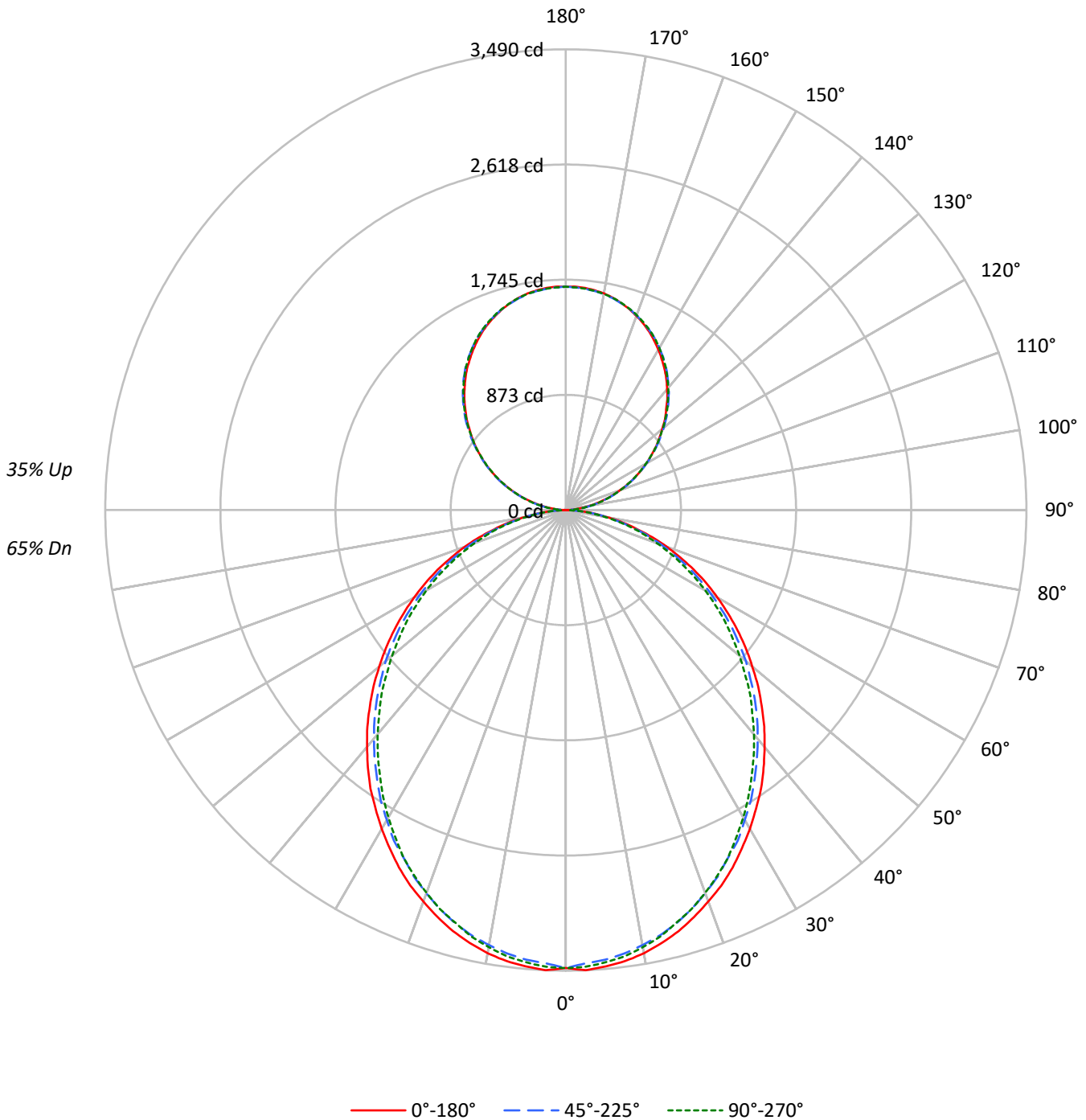
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13562.9 lumens
Efficiency: N/A
Efficacy: 94.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 143.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9781
Total Harmonic Distortion (THDi): 0.075
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P922932
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Luminous Intensity Polar Plot





TEST NUMBER: P922932

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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 | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 80 | 80 | 80 | 70 | 70 | 70 | 70 | 70 | 70 | 65 |
| 1 | 101 | 97 | 93 | 89 | 95 | 91 | 88 | 84 | 81 | 78 | 75 | 71 | 69 | 67 | 62 | 60 | 59 | 62 | 60 | 59 | 55 |
| 2 | 92 | 85 | 78 | 73 | 86 | 80 | 74 | 69 | 71 | 66 | 63 | 62 | 59 | 56 | 55 | 52 | 50 | 55 | 52 | 50 | 46 |
| 3 | 84 | 74 | 67 | 61 | 79 | 70 | 63 | 58 | 62 | 57 | 53 | 55 | 51 | 47 | 48 | 45 | 42 | 48 | 45 | 42 | 39 |
| 4 | 77 | 66 | 58 | 52 | 72 | 62 | 55 | 49 | 55 | 50 | 45 | 49 | 44 | 41 | 43 | 40 | 37 | 43 | 40 | 37 | 33 |
| 5 | 71 | 59 | 50 | 44 | 66 | 56 | 48 | 42 | 50 | 44 | 39 | 44 | 39 | 35 | 39 | 35 | 32 | 39 | 35 | 32 | 29 |
| 6 | 65 | 53 | 45 | 39 | 61 | 50 | 43 | 37 | 45 | 39 | 34 | 40 | 35 | 31 | 35 | 31 | 28 | 35 | 31 | 28 | 26 |
| 7 | 60 | 48 | 40 | 34 | 57 | 45 | 38 | 33 | 41 | 35 | 30 | 36 | 31 | 28 | 32 | 28 | 25 | 32 | 28 | 25 | 23 |
| 8 | 56 | 44 | 36 | 30 | 53 | 41 | 34 | 29 | 37 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 22 | 30 | 26 | 22 | 20 |
| 9 | 52 | 40 | 32 | 27 | 49 | 38 | 31 | 26 | 34 | 28 | 24 | 31 | 26 | 22 | 27 | 23 | 20 | 27 | 23 | 20 | 18 |
| 10 | 49 | 37 | 29 | 24 | 46 | 35 | 28 | 23 | 32 | 26 | 22 | 28 | 24 | 20 | 25 | 21 | 19 | 25 | 21 | 19 | 17 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3976 | 3976 | 3976 |
| 5° | 3979 | 3918 | 3945 |
| 10° | 3945 | 3862 | 3891 |
| 15° | 3884 | 3796 | 3806 |
| 20° | 3803 | 3705 | 3719 |
| 25° | 3723 | 3597 | 3619 |
| 30° | 3622 | 3496 | 3492 |
| 35° | 3527 | 3377 | 3358 |
| 40° | 3410 | 3257 | 3230 |
| 45° | 3293 | 3137 | 3100 |
| 50° | 3166 | 3010 | 2948 |
| 55° | 3032 | 2864 | 2809 |
| 60° | 2880 | 2691 | 2649 |
| 65° | 2714 | 2511 | 2460 |
| 70° | 2503 | 2291 | 2257 |
| 75° | 2212 | 2028 | 2068 |
| 80° | 1859 | 1692 | 1709 |
| 85° | 1308 | 1122 | 1118 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3293 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 326.6 | 2.4 |
| 10°-20° | 918.8 | 6.8 |
| 20°-30° | 1350.3 | 10.0 |
| 30°-40° | 1568.3 | 11.6 |
| 40°-50° | 1566.4 | 11.5 |
| 50°-60° | 1365.8 | 10.1 |
| 60°-70° | 1009.7 | 7.4 |
| 70°-80° | 571.3 | 4.2 |
| 80°-90° | 155.6 | 1.1 |
| 90°-100° | 104.7 | 0.8 |
| 100°-110° | 332.7 | 2.5 |
| 110°-120° | 569.3 | 4.2 |
| 120°-130° | 748.8 | 5.5 |
| 130°-140° | 840.5 | 6.2 |
| 140°-150° | 824.2 | 6.1 |
| 150°-160° | 691.4 | 5.1 |
| 160°-170° | 458.5 | 3.4 |
| 170°-180° | 160.3 | 1.2 |
| 0°-30° | 2595.7 | 19.1 |
| 0°-40° | 4164.0 | 30.7 |
| 0°-60° | 7096.2 | 52.3 |
| 0°-90° | 8832.7 | 65.1 |
| 90°-120° | 1006.7 | 7.4 |
| 90°-150° | 3420.1 | 25.2 |
| 90°-180° | 4730.0 | 34.9 |
| 0°-180° | 13562.9 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3470 | 3470 | 3470 | 3470 | 3470 | |
| 5° | 3470 | 3457 | 3420 | 3446 | 3440 | 329 |
| 15° | 3303 | 3283 | 3240 | 3253 | 3236 | 930 |
| 25° | 2989 | 2963 | 2906 | 2912 | 2906 | 1376 |
| 35° | 2579 | 2546 | 2492 | 2472 | 2456 | 1611 |
| 45° | 2099 | 2075 | 2025 | 1989 | 1975 | 1620 |
| 55° | 1588 | 1568 | 1528 | 1488 | 1472 | 1420 |
| 65° | 1071 | 1051 | 1018 | 988 | 971 | 1059 |
| 75° | 560 | 554 | 537 | 517 | 524 | 598 |
| 85° | 137 | 134 | 130 | 120 | 117 | 152 |
| 90° | 2 | 18 | 50 | 47 | 48 | 13 |
| 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: P922932

CATALOG NUMBER: DFN2DIP-SQ3F0-100D060US940-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3469.7 | 3469.7 | 3469.7 | 3469.7 | 3469.7 |
| 2.5° | 3489.9 | 3473.2 | 3436.4 | 3469.7 | 3463.3 |
| 5° | 3469.7 | 3456.6 | 3419.8 | 3446.4 | 3440.0 |
| 7.5° | 3446.4 | 3426.5 | 3389.7 | 3416.6 | 3409.9 |
| 10° | 3409.9 | 3386.5 | 3346.5 | 3373.1 | 3363.2 |
| 12.5° | 3359.6 | 3339.8 | 3299.8 | 3316.4 | 3309.7 |
| 15° | 3303.0 | 3283.2 | 3239.6 | 3253.0 | 3236.5 |
| 17.5° | 3232.9 | 3213.1 | 3169.5 | 3186.2 | 3169.5 |
| 20° | 3156.0 | 3136.2 | 3089.5 | 3099.4 | 3086.3 |
| 22.5° | 3079.6 | 3049.6 | 3006.0 | 3006.0 | 2999.3 |
| 25° | 2989.4 | 2962.8 | 2906.2 | 2912.5 | 2906.2 |
| 27.5° | 2889.1 | 2865.8 | 2822.6 | 2812.7 | 2796.0 |
| 30° | 2789.4 | 2762.4 | 2712.5 | 2702.6 | 2689.1 |
| 32.5° | 2682.4 | 2662.6 | 2609.1 | 2589.0 | 2575.5 |
| 35° | 2579.1 | 2545.8 | 2492.3 | 2472.2 | 2455.5 |
| 37.5° | 2462.3 | 2432.1 | 2378.7 | 2355.4 | 2338.7 |
| 40° | 2342.3 | 2315.3 | 2261.9 | 2232.2 | 2218.8 |
| 42.5° | 2225.4 | 2198.5 | 2145.5 | 2111.8 | 2092.0 |
| 45° | 2098.7 | 2075.4 | 2025.1 | 1988.6 | 1975.2 |
| 47.5° | 1975.2 | 1951.9 | 1898.4 | 1861.5 | 1841.7 |
| 50° | 1844.9 | 1828.3 | 1781.5 | 1734.8 | 1718.2 |
| 52.5° | 1718.2 | 1694.9 | 1651.6 | 1614.9 | 1591.5 |
| 55° | 1588.3 | 1568.2 | 1528.1 | 1488.1 | 1471.5 |
| 57.5° | 1458.0 | 1441.4 | 1397.8 | 1357.9 | 1344.4 |
| 60° | 1327.8 | 1314.6 | 1267.9 | 1231.1 | 1221.2 |
| 62.5° | 1201.0 | 1177.7 | 1144.4 | 1111.2 | 1097.7 |
| 65° | 1071.1 | 1051.0 | 1017.7 | 987.6 | 971.0 |
| 67.5° | 937.7 | 920.7 | 891.0 | 867.6 | 854.2 |
| 70° | 814.1 | 800.7 | 770.6 | 747.3 | 734.1 |
| 72.5° | 687.4 | 674.0 | 657.4 | 634.0 | 624.0 |
| 75° | 560.4 | 554.0 | 537.0 | 517.2 | 523.9 |
| 77.5° | 447.1 | 433.6 | 426.9 | 417.0 | 407.1 |
| 80° | 333.8 | 330.3 | 323.5 | 313.6 | 306.9 |
| 82.5° | 226.9 | 226.9 | 223.7 | 210.3 | 210.3 |
| 85° | 136.6 | 133.5 | 130.3 | 120.0 | 116.8 |
| 87.5° | 60.2 | 53.4 | 46.7 | 36.8 | 33.3 |
| 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: P922932

CATALOG NUMBER: DFN2DIP-SQ3F0-100D060US940-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 |



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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 | 13.32 | 14.34 | 14.14 | 15.18 | 16.21 | 12.88 | 13.89 | 13.69 | 14.73 | 15.77 |
| | 3H | 14.99 | 15.90 | 15.82 | 16.75 | 17.81 | 14.50 | 15.41 | 15.33 | 16.26 | 17.32 |
| | 4H | 15.58 | 16.44 | 16.43 | 17.30 | 18.37 | 15.09 | 15.95 | 15.93 | 16.80 | 17.88 |
| | 6H | 15.99 | 16.78 | 16.84 | 17.64 | 18.73 | 15.49 | 16.28 | 16.34 | 17.14 | 18.23 |
| | 8H | 16.09 | 16.85 | 16.96 | 17.73 | 18.82 | 15.59 | 16.35 | 16.46 | 17.23 | 18.32 |
| | 12H | 16.14 | 16.87 | 17.02 | 17.74 | 18.86 | 15.64 | 16.36 | 16.51 | 17.23 | 18.35 |
| 4H | 2H | 13.80 | 14.66 | 14.65 | 15.51 | 16.59 | 13.44 | 14.30 | 14.29 | 15.16 | 16.24 |
| | 3H | 15.67 | 16.39 | 16.53 | 17.28 | 18.37 | 15.26 | 15.98 | 16.13 | 16.87 | 17.96 |
| | 4H | 16.39 | 17.04 | 17.26 | 17.93 | 19.05 | 15.96 | 16.62 | 16.84 | 17.51 | 18.62 |
| | 6H | 16.91 | 17.48 | 17.80 | 18.38 | 19.51 | 16.48 | 17.04 | 17.37 | 17.95 | 19.07 |
| | 8H | 17.06 | 17.59 | 17.95 | 18.49 | 19.63 | 16.62 | 17.15 | 17.51 | 18.06 | 19.19 |
| | 12H | 17.14 | 17.62 | 18.05 | 18.54 | 19.68 | 16.69 | 17.17 | 17.60 | 18.09 | 19.23 |
| 8H | 4H | 16.59 | 17.12 | 17.49 | 18.03 | 19.16 | 16.22 | 16.75 | 17.11 | 17.65 | 18.78 |
| | 6H | 17.23 | 17.66 | 18.14 | 18.61 | 19.74 | 16.84 | 17.28 | 17.76 | 18.23 | 19.36 |
| | 8H | 17.44 | 17.83 | 18.37 | 18.77 | 19.92 | 17.05 | 17.44 | 17.98 | 18.38 | 19.53 |
| | 12H | 17.58 | 17.92 | 18.51 | 18.85 | 20.05 | 17.17 | 17.51 | 18.10 | 18.44 | 19.64 |
| 12H | 4H | 16.59 | 17.06 | 17.50 | 17.99 | 19.13 | 16.22 | 16.69 | 17.13 | 17.62 | 18.76 |
| | 6H | 17.25 | 17.64 | 18.18 | 18.58 | 19.73 | 16.88 | 17.27 | 17.81 | 18.21 | 19.36 |
| | 8H | 17.50 | 17.84 | 18.43 | 18.77 | 19.97 | 17.12 | 17.46 | 18.05 | 18.39 | 19.59 |