

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: P908906

Luminaire Tested: DFN2DIP-PN4F0-120D080US840-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908906
REPORT IS A COMBINATION OF REPORTS P899698 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-120D080US840-RLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

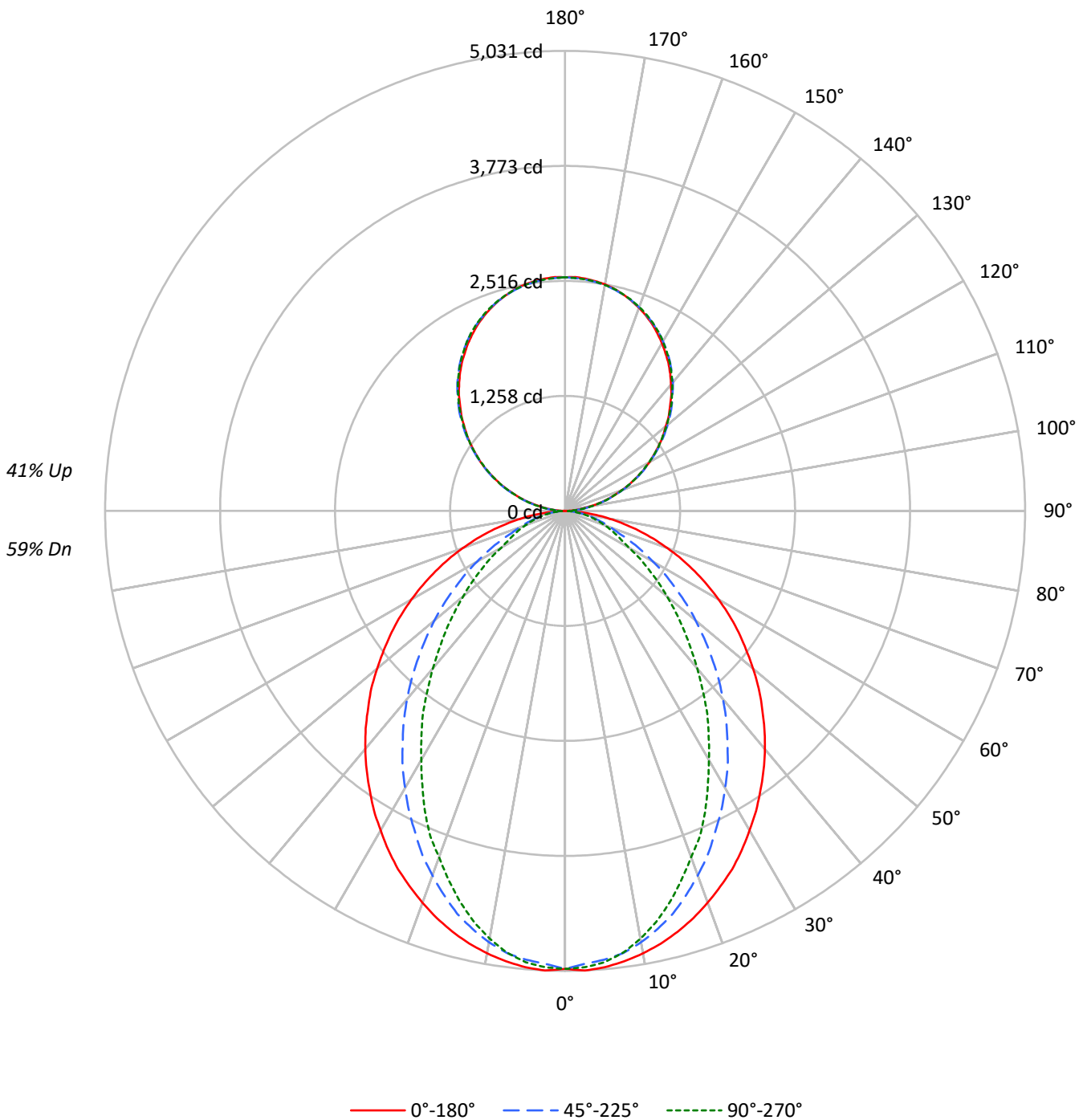
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17450.4 lumens
Efficiency: N/A
Efficacy: 94.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 184.2
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

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Luminous Intensity Polar Plot





TEST NUMBER: P908906

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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 | 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° | 3656 | 3656 | 3656 |
| 5° | 3662 | 3598 | 3622 |
| 10° | 3626 | 3528 | 3505 |
| 15° | 3576 | 3412 | 3323 |
| 20° | 3510 | 3252 | 3100 |
| 25° | 3442 | 3072 | 2884 |
| 30° | 3351 | 2888 | 2611 |
| 35° | 3262 | 2689 | 2371 |
| 40° | 3172 | 2484 | 2095 |
| 45° | 3067 | 2257 | 1846 |
| 50° | 2958 | 2027 | 1602 |
| 55° | 2844 | 1781 | 1367 |
| 60° | 2713 | 1524 | 1126 |
| 65° | 2562 | 1263 | 1014 |
| 70° | 2378 | 1019 | 919 |
| 75° | 2148 | 899 | 837 |
| 80° | 1815 | 756 | 728 |
| 85° | 1264 | 507 | 552 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3067 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 469.4 | 2.7 |
| 10°-20° | 1288.6 | 7.4 |
| 20°-30° | 1809.2 | 10.4 |
| 30°-40° | 1972.1 | 11.3 |
| 40°-50° | 1812.6 | 10.4 |
| 50°-60° | 1423.5 | 8.2 |
| 60°-70° | 926.6 | 5.3 |
| 70°-80° | 476.9 | 2.7 |
| 80°-90° | 129.0 | 0.7 |
| 90°-100° | 158.1 | 0.9 |
| 100°-110° | 502.4 | 2.9 |
| 110°-120° | 859.7 | 4.9 |
| 120°-130° | 1130.6 | 6.5 |
| 130°-140° | 1269.1 | 7.3 |
| 140°-150° | 1244.5 | 7.1 |
| 150°-160° | 1043.9 | 6.0 |
| 160°-170° | 692.3 | 4.0 |
| 170°-180° | 242.0 | 1.4 |
| 0°-30° | 3567.2 | 20.4 |
| 0°-40° | 5539.3 | 31.7 |
| 0°-60° | 8775.3 | 50.3 |
| 0°-90° | 10307.9 | 59.1 |
| 90°-120° | 1520.1 | 8.7 |
| 90°-150° | 5164.3 | 29.6 |
| 90°-180° | 7143.0 | 40.9 |
| 0°-180° | 17450.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 5008 | 5008 | 5008 | 5008 | 5008 | |
| 5° | 5008 | 4986 | 4927 | 4968 | 4954 | 475 |
| 15° | 4764 | 4714 | 4560 | 4474 | 4429 | 1342 |
| 25° | 4324 | 4179 | 3880 | 3694 | 3626 | 1989 |
| 35° | 3726 | 3495 | 3096 | 2810 | 2710 | 2332 |
| 45° | 3046 | 2742 | 2266 | 1944 | 1836 | 2352 |
| 55° | 2316 | 1963 | 1473 | 1201 | 1115 | 2070 |
| 65° | 1564 | 1196 | 789 | 635 | 621 | 1550 |
| 75° | 834 | 516 | 363 | 331 | 326 | 882 |
| 85° | 195 | 100 | 86 | 86 | 86 | 224 |
| 90° | 2 | 28 | 76 | 71 | 73 | 17 |
| 95° | 112 | 134 | 138 | 138 | 134 | 125 |
| 105° | 464 | 470 | 474 | 478 | 478 | 489 |
| 115° | 863 | 875 | 871 | 869 | 863 | 853 |
| 125° | 1255 | 1274 | 1268 | 1261 | 1259 | 1121 |
| 135° | 1623 | 1647 | 1652 | 1649 | 1643 | 1254 |
| 145° | 1970 | 1986 | 1998 | 2000 | 1992 | 1231 |
| 155° | 2253 | 2259 | 2266 | 2277 | 2270 | 1037 |
| 165° | 2451 | 2449 | 2449 | 2464 | 2453 | 691 |
| 175° | 2550 | 2544 | 2540 | 2555 | 2542 | 242 |
| 180° | 2555 | 2555 | 2555 | 2555 | 2555 | |



TEST NUMBER: P908906

CATALOG NUMBER: DFN2DIP-PN4F0-120D080US840-RLFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 5008.5 | 5008.5 | 5008.5 | 5008.5 | 5008.5 |
| 2.5° | 5031.2 | 5008.5 | 4958.5 | 5004.2 | 4995.0 |
| 5° | 5008.5 | 4985.9 | 4926.7 | 4967.6 | 4954.2 |
| 7.5° | 4967.6 | 4940.7 | 4877.2 | 4895.0 | 4872.4 |
| 10° | 4913.3 | 4881.6 | 4791.1 | 4777.2 | 4750.3 |
| 12.5° | 4845.4 | 4804.6 | 4681.9 | 4655.1 | 4605.1 |
| 15° | 4763.7 | 4713.7 | 4559.8 | 4473.7 | 4428.6 |
| 17.5° | 4668.5 | 4595.9 | 4405.4 | 4306.0 | 4233.4 |
| 20° | 4559.8 | 4469.0 | 4242.4 | 4129.4 | 4029.4 |
| 22.5° | 4442.0 | 4337.7 | 4074.6 | 3920.7 | 3852.9 |
| 25° | 4324.2 | 4178.9 | 3879.8 | 3694.2 | 3625.9 |
| 27.5° | 4183.8 | 4029.4 | 3698.5 | 3485.6 | 3381.1 |
| 30° | 4034.2 | 3861.6 | 3499.0 | 3268.1 | 3145.5 |
| 32.5° | 3889.0 | 3680.3 | 3309.0 | 3036.9 | 2923.4 |
| 35° | 3726.0 | 3494.6 | 3095.9 | 2810.4 | 2710.3 |
| 37.5° | 3567.2 | 3317.7 | 2896.4 | 2583.3 | 2470.3 |
| 40° | 3399.4 | 3127.8 | 2687.8 | 2366.0 | 2248.2 |
| 42.5° | 3227.2 | 2937.3 | 2479.5 | 2143.8 | 2030.8 |
| 45° | 3046.0 | 2742.1 | 2266.4 | 1944.3 | 1835.5 |
| 47.5° | 2873.8 | 2552.1 | 2062.5 | 1740.4 | 1640.8 |
| 50° | 2683.4 | 2361.7 | 1863.0 | 1549.9 | 1455.2 |
| 52.5° | 2497.3 | 2157.3 | 1672.5 | 1373.4 | 1287.4 |
| 55° | 2316.0 | 1962.6 | 1473.0 | 1201.2 | 1115.2 |
| 57.5° | 2130.3 | 1767.8 | 1296.5 | 1042.6 | 970.0 |
| 60° | 1940.0 | 1577.3 | 1110.3 | 879.6 | 807.0 |
| 62.5° | 1754.3 | 1391.7 | 951.7 | 734.4 | 698.2 |
| 65° | 1563.9 | 1196.5 | 788.7 | 634.8 | 620.9 |
| 67.5° | 1382.6 | 1015.1 | 634.8 | 557.3 | 543.9 |
| 70° | 1192.1 | 838.7 | 525.6 | 480.4 | 462.1 |
| 72.5° | 1010.9 | 675.2 | 439.5 | 403.4 | 394.4 |
| 75° | 833.8 | 516.4 | 362.6 | 330.8 | 326.5 |
| 77.5° | 657.4 | 366.9 | 285.7 | 267.4 | 258.2 |
| 80° | 493.9 | 263.1 | 217.3 | 199.5 | 199.5 |
| 82.5° | 344.4 | 176.9 | 149.6 | 140.4 | 140.4 |
| 85° | 194.8 | 99.6 | 86.0 | 86.0 | 86.0 |
| 87.5° | 72.6 | 36.1 | 36.1 | 31.7 | 31.7 |
| 90° | 2.3 | 27.8 | 75.5 | 70.9 | 73.2 |
| 92.5° | 47.8 | 64.7 | 67.1 | 69.3 | 69.3 |
| 95° | 112.5 | 134.0 | 137.8 | 137.8 | 134.0 |
| 97.5° | 187.2 | 207.2 | 215.7 | 215.7 | 215.7 |
| 100° | 273.5 | 291.1 | 297.3 | 297.3 | 295.0 |
| 102.5° | 364.4 | 377.5 | 385.9 | 388.2 | 385.9 |
| 105° | 463.7 | 469.9 | 474.5 | 478.4 | 478.4 |
| 107.5° | 562.3 | 571.6 | 571.6 | 573.1 | 562.3 |
| 110° | 657.8 | 670.1 | 670.1 | 670.1 | 664.0 |



TEST NUMBER: P908906

CATALOG NUMBER: DFN2DIP-PN4F0-120D080US840-RLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 761.0 | 774.2 | 771.8 | 765.7 | 761.0 |
| 115° | 862.7 | 875.0 | 871.2 | 868.9 | 862.7 |
| 117.5° | 963.6 | 980.6 | 969.8 | 963.6 | 957.5 |
| 120° | 1065.3 | 1082.3 | 1065.3 | 1065.3 | 1058.3 |
| 122.5° | 1157.7 | 1179.3 | 1168.5 | 1162.4 | 1157.7 |
| 125° | 1254.8 | 1274.0 | 1267.9 | 1260.9 | 1258.7 |
| 127.5° | 1349.6 | 1373.4 | 1364.9 | 1355.7 | 1349.6 |
| 130° | 1438.1 | 1465.8 | 1462.0 | 1457.4 | 1449.0 |
| 132.5° | 1537.5 | 1559.0 | 1560.6 | 1549.8 | 1543.7 |
| 135° | 1623.0 | 1646.9 | 1651.5 | 1649.2 | 1643.1 |
| 137.5° | 1718.5 | 1737.8 | 1741.6 | 1740.1 | 1730.8 |
| 140° | 1802.5 | 1821.7 | 1832.5 | 1832.5 | 1824.0 |
| 142.5° | 1888.8 | 1908.0 | 1914.2 | 1916.5 | 1908.0 |
| 145° | 1970.4 | 1985.8 | 1998.1 | 2000.4 | 1992.0 |
| 147.5° | 2043.6 | 2062.9 | 2072.0 | 2076.0 | 2067.5 |
| 150° | 2119.1 | 2132.1 | 2140.6 | 2147.6 | 2140.6 |
| 152.5° | 2186.1 | 2199.2 | 2210.0 | 2218.5 | 2210.0 |
| 155° | 2253.1 | 2259.3 | 2266.2 | 2276.9 | 2270.1 |
| 157.5° | 2310.9 | 2315.5 | 2319.4 | 2334.7 | 2324.0 |
| 160° | 2362.5 | 2367.1 | 2369.4 | 2382.5 | 2373.3 |
| 162.5° | 2410.2 | 2410.2 | 2412.6 | 2427.2 | 2416.4 |
| 165° | 2451.0 | 2448.7 | 2448.7 | 2464.2 | 2453.4 |
| 167.5° | 2488.0 | 2481.1 | 2481.1 | 2496.5 | 2485.7 |
| 170° | 2515.8 | 2509.6 | 2507.3 | 2522.7 | 2509.6 |
| 172.5° | 2535.1 | 2528.9 | 2526.6 | 2541.9 | 2528.9 |
| 175° | 2550.4 | 2544.3 | 2539.6 | 2555.1 | 2541.9 |
| 177.5° | 2558.9 | 2552.7 | 2548.1 | 2561.2 | 2548.1 |
| 180° | 2555.1 | 2555.1 | 2555.1 | 2555.1 | 2555.1 |



TEST NUMBER: P908906
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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 | 12.46 | 13.37 | 13.35 | 14.27 | 15.41 | 8.43 | 9.34 | 9.31 | 10.24 | 11.38 |
| | 3H | 14.15 | 14.96 | 15.05 | 15.87 | 17.04 | 9.62 | 10.44 | 10.52 | 11.35 | 12.51 |
| | 4H | 14.76 | 15.53 | 15.68 | 16.45 | 17.62 | 10.08 | 10.85 | 10.99 | 11.76 | 12.93 |
| | 6H | 15.19 | 15.90 | 16.11 | 16.82 | 18.01 | 10.40 | 11.11 | 11.33 | 12.03 | 13.22 |
| | 8H | 15.32 | 16.00 | 16.25 | 16.93 | 18.12 | 10.50 | 11.17 | 11.43 | 12.11 | 13.29 |
| | 12H | 15.39 | 16.03 | 16.32 | 16.96 | 18.17 | 10.54 | 11.18 | 11.48 | 12.11 | 13.33 |
| 4H | 2H | 12.49 | 13.26 | 13.41 | 14.17 | 15.35 | 9.04 | 9.80 | 9.95 | 10.72 | 11.89 |
| | 3H | 14.33 | 14.97 | 15.26 | 15.91 | 17.10 | 10.39 | 11.03 | 11.32 | 11.98 | 13.17 |
| | 4H | 15.03 | 15.61 | 15.97 | 16.55 | 17.76 | 10.95 | 11.53 | 11.88 | 12.47 | 13.68 |
| | 6H | 15.55 | 16.05 | 16.50 | 17.02 | 18.23 | 11.37 | 11.87 | 12.32 | 12.83 | 14.05 |
| | 8H | 15.73 | 16.20 | 16.68 | 17.15 | 18.38 | 11.50 | 11.97 | 12.45 | 12.93 | 14.15 |
| | 12H | 15.83 | 16.25 | 16.80 | 17.23 | 18.46 | 11.57 | 11.99 | 12.54 | 12.97 | 14.20 |
| 8H | 4H | 15.00 | 15.47 | 15.95 | 16.43 | 17.66 | 11.23 | 11.70 | 12.19 | 12.66 | 13.89 |
| | 6H | 15.58 | 15.96 | 16.55 | 16.96 | 18.19 | 11.76 | 12.14 | 12.73 | 13.14 | 14.37 |
| | 8H | 15.79 | 16.14 | 16.78 | 17.12 | 18.37 | 11.95 | 12.29 | 12.93 | 13.28 | 14.52 |
| | 12H | 15.94 | 16.24 | 16.93 | 17.22 | 18.51 | 12.07 | 12.37 | 13.06 | 13.35 | 14.65 |
| 12H | 4H | 14.96 | 15.38 | 15.93 | 16.35 | 17.59 | 11.24 | 11.66 | 12.21 | 12.64 | 13.87 |
| | 6H | 15.55 | 15.89 | 16.54 | 16.88 | 18.12 | 11.81 | 12.15 | 12.79 | 13.14 | 14.38 |
| | 8H | 15.78 | 16.08 | 16.77 | 17.06 | 18.35 | 12.02 | 12.32 | 13.01 | 13.30 | 14.60 |