

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: P906941

Luminaire Tested: DFN2DIP-SQ4F0-140D120US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906941
REPORT IS A COMBINATION OF REPORTS P901701 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D120US835-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

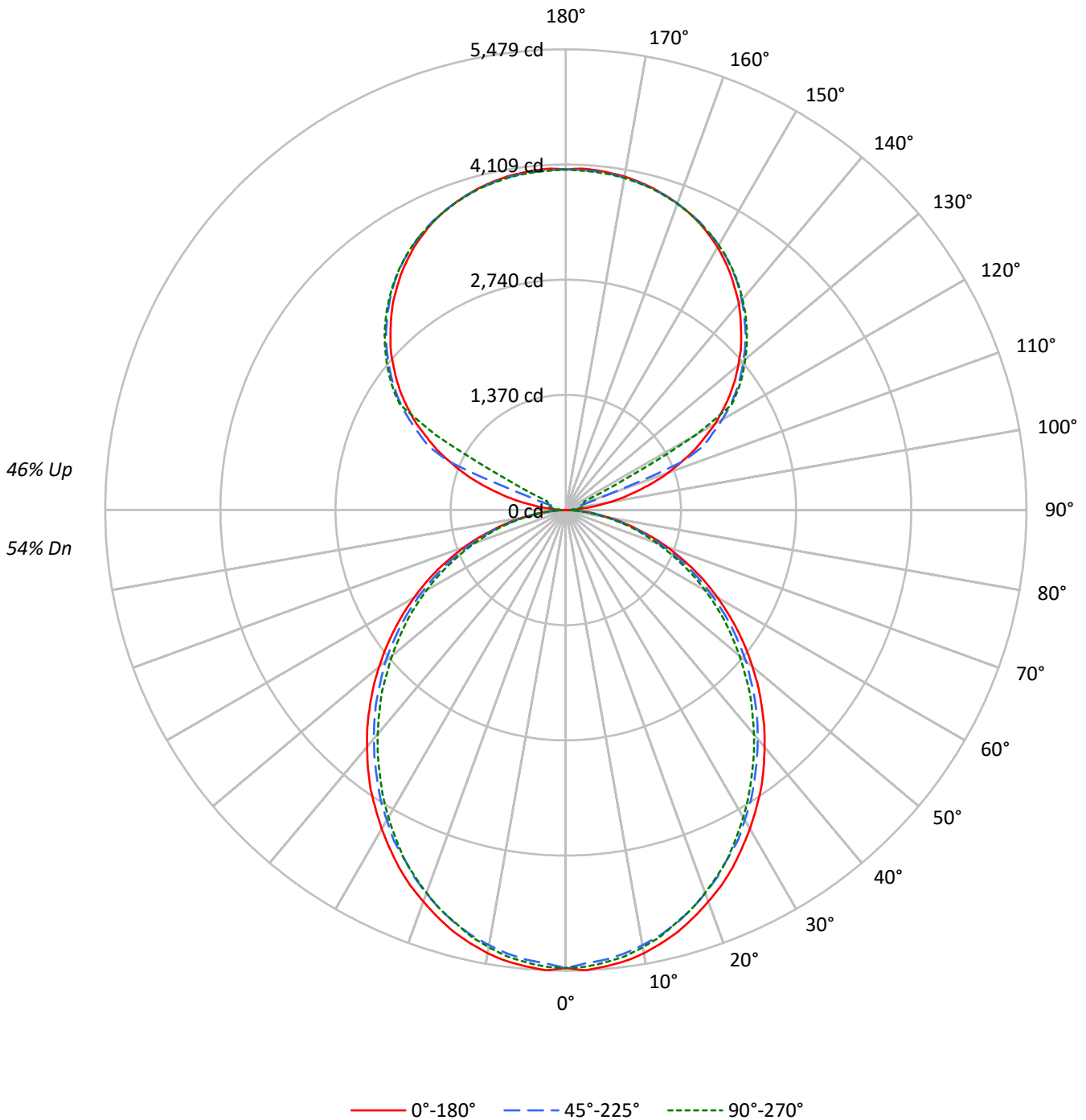
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 25740.0 lumens
Efficiency: N/A
Efficacy: 110.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 233.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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: P906941

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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 | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 60 | 60 | 60 | 54 |
| 1 | 99 | 94 | 90 | 87 | 91 | 88 | 84 | 81 | 75 | 73 | 70 | 63 | 62 | 60 | 53 | 52 | 50 | 45 |
| 2 | 90 | 82 | 76 | 71 | 83 | 77 | 71 | 67 | 66 | 62 | 58 | 56 | 53 | 50 | 46 | 44 | 42 | 38 |
| 3 | 82 | 72 | 65 | 59 | 76 | 67 | 61 | 56 | 58 | 53 | 49 | 49 | 46 | 42 | 41 | 38 | 36 | 32 |
| 4 | 75 | 64 | 56 | 50 | 69 | 60 | 53 | 47 | 52 | 46 | 42 | 44 | 40 | 36 | 37 | 34 | 31 | 28 |
| 5 | 69 | 57 | 49 | 43 | 64 | 53 | 46 | 41 | 46 | 40 | 36 | 39 | 35 | 32 | 33 | 30 | 27 | 24 |
| 6 | 63 | 51 | 43 | 37 | 59 | 48 | 41 | 35 | 42 | 36 | 31 | 36 | 31 | 28 | 30 | 27 | 24 | 21 |
| 7 | 59 | 46 | 38 | 33 | 54 | 43 | 36 | 31 | 38 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 | 19 |
| 8 | 54 | 42 | 34 | 29 | 50 | 39 | 32 | 28 | 34 | 29 | 25 | 30 | 25 | 22 | 25 | 22 | 19 | 17 |
| 9 | 51 | 38 | 31 | 26 | 47 | 36 | 29 | 25 | 32 | 26 | 22 | 27 | 23 | 20 | 23 | 20 | 17 | 15 |
| 10 | 47 | 35 | 28 | 23 | 44 | 33 | 27 | 22 | 29 | 24 | 20 | 25 | 21 | 18 | 22 | 18 | 16 | 14 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3822 | 3822 | 3822 |
| 5° | 3828 | 3770 | 3796 |
| 10° | 3797 | 3720 | 3745 |
| 15° | 3741 | 3659 | 3666 |
| 20° | 3666 | 3575 | 3585 |
| 25° | 3591 | 3474 | 3491 |
| 30° | 3497 | 3380 | 3371 |
| 35° | 3408 | 3269 | 3244 |
| 40° | 3298 | 3157 | 3124 |
| 45° | 3188 | 3045 | 3001 |
| 50° | 3069 | 2927 | 2858 |
| 55° | 2943 | 2791 | 2727 |
| 60° | 2802 | 2629 | 2577 |
| 65° | 2647 | 2462 | 2400 |
| 70° | 2450 | 2258 | 2210 |
| 75° | 2178 | 2014 | 2036 |
| 80° | 1850 | 1704 | 1701 |
| 85° | 1337 | 1165 | 1143 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3188 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 512.7 | 2.0 |
| 10°-20° | 1442.6 | 5.6 |
| 20°-30° | 2120.0 | 8.2 |
| 30°-40° | 2462.3 | 9.6 |
| 40°-50° | 2459.3 | 9.6 |
| 50°-60° | 2144.4 | 8.3 |
| 60°-70° | 1585.2 | 6.2 |
| 70°-80° | 896.9 | 3.5 |
| 80°-90° | 243.8 | 0.9 |
| 90°-100° | 133.5 | 0.5 |
| 100°-110° | 497.8 | 1.9 |
| 110°-120° | 1320.3 | 5.1 |
| 120°-130° | 2189.8 | 8.5 |
| 130°-140° | 2326.1 | 9.0 |
| 140°-150° | 2161.8 | 8.4 |
| 150°-160° | 1738.1 | 6.8 |
| 160°-170° | 1119.9 | 4.4 |
| 170°-180° | 385.5 | 1.5 |
| 0°-30° | 4075.3 | 15.8 |
| 0°-40° | 6537.6 | 25.4 |
| 0°-60° | 11141.3 | 43.3 |
| 0°-90° | 13867.1 | 53.9 |
| 90°-120° | 1951.7 | 7.6 |
| 90°-150° | 8629.4 | 33.5 |
| 90°-180° | 11873.0 | 46.1 |
| 0°-180° | 25740.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 5448 | 5448 | 5448 | 5448 | 5448 | |
| 5° | 5448 | 5427 | 5369 | 5411 | 5401 | 517 |
| 15° | 5186 | 5155 | 5086 | 5107 | 5081 | 1461 |
| 25° | 4693 | 4652 | 4563 | 4573 | 4563 | 2160 |
| 35° | 4049 | 3997 | 3913 | 3881 | 3855 | 2529 |
| 45° | 3295 | 3258 | 3180 | 3122 | 3101 | 2543 |
| 55° | 2494 | 2462 | 2399 | 2336 | 2310 | 2229 |
| 65° | 1682 | 1650 | 1598 | 1550 | 1524 | 1663 |
| 75° | 880 | 870 | 843 | 812 | 822 | 939 |
| 85° | 214 | 210 | 204 | 188 | 183 | 239 |
| 90° | 3 | 35 | 58 | 73 | 79 | 24 |
| 95° | 190 | 94 | 114 | 129 | 126 | 225 |
| 105° | 891 | 979 | 179 | 211 | 223 | 952 |
| 115° | 1685 | 1735 | 1808 | 451 | 240 | 1659 |
| 125° | 2382 | 2421 | 2476 | 2497 | 2506 | 2125 |
| 135° | 2948 | 2995 | 3021 | 3051 | 3045 | 2277 |
| 145° | 3420 | 3417 | 3467 | 3487 | 3472 | 2139 |
| 155° | 3766 | 3739 | 3775 | 3792 | 3769 | 1735 |
| 165° | 3968 | 3950 | 3959 | 3980 | 3959 | 1121 |
| 175° | 4058 | 4038 | 4044 | 4064 | 4035 | 386 |
| 180° | 4050 | 4050 | 4050 | 4050 | 4050 | |



TEST NUMBER: P906941

CATALOG NUMBER: DFN2DIP-SQ4F0-140D120US835-FLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 5447.5 | 5447.5 | 5447.5 | 5447.5 | 5447.5 |
| 2.5° | 5479.1 | 5453.0 | 5395.2 | 5447.5 | 5437.5 |
| 5° | 5447.5 | 5426.9 | 5369.1 | 5410.8 | 5400.8 |
| 7.5° | 5410.8 | 5379.7 | 5321.9 | 5364.1 | 5353.5 |
| 10° | 5353.5 | 5316.9 | 5254.1 | 5295.8 | 5280.2 |
| 12.5° | 5274.6 | 5243.5 | 5180.7 | 5206.8 | 5196.3 |
| 15° | 5185.7 | 5154.6 | 5086.2 | 5107.4 | 5081.2 |
| 17.5° | 5075.7 | 5044.6 | 4976.2 | 5002.3 | 4976.2 |
| 20° | 4955.1 | 4924.0 | 4850.6 | 4866.2 | 4845.6 |
| 22.5° | 4835.0 | 4787.8 | 4719.4 | 4719.4 | 4708.9 |
| 25° | 4693.3 | 4651.6 | 4562.7 | 4572.7 | 4562.7 |
| 27.5° | 4536.0 | 4499.4 | 4431.6 | 4416.0 | 4389.9 |
| 30° | 4379.3 | 4337.1 | 4258.7 | 4243.2 | 4222.0 |
| 32.5° | 4211.5 | 4180.4 | 4096.4 | 4064.8 | 4043.6 |
| 35° | 4049.2 | 3997.0 | 3913.0 | 3881.4 | 3855.2 |
| 37.5° | 3865.8 | 3818.6 | 3734.6 | 3698.0 | 3671.8 |
| 40° | 3677.4 | 3635.2 | 3551.2 | 3504.6 | 3483.4 |
| 42.5° | 3494.0 | 3451.8 | 3368.4 | 3315.6 | 3284.5 |
| 45° | 3295.0 | 3258.4 | 3179.5 | 3122.2 | 3101.1 |
| 47.5° | 3101.1 | 3064.4 | 2980.5 | 2922.7 | 2891.6 |
| 50° | 2896.6 | 2870.5 | 2797.1 | 2723.7 | 2697.6 |
| 52.5° | 2697.6 | 2660.9 | 2593.1 | 2535.3 | 2498.7 |
| 55° | 2493.7 | 2462.0 | 2399.2 | 2336.4 | 2310.3 |
| 57.5° | 2289.1 | 2263.0 | 2194.7 | 2131.9 | 2110.7 |
| 60° | 2084.6 | 2064.1 | 1990.7 | 1932.9 | 1917.3 |
| 62.5° | 1885.7 | 1849.0 | 1796.7 | 1744.5 | 1723.4 |
| 65° | 1681.7 | 1650.0 | 1597.8 | 1550.5 | 1524.4 |
| 67.5° | 1472.2 | 1445.5 | 1398.8 | 1362.1 | 1341.0 |
| 70° | 1278.2 | 1257.1 | 1209.9 | 1173.2 | 1152.6 |
| 72.5° | 1079.3 | 1058.1 | 1032.0 | 995.4 | 979.8 |
| 75° | 879.8 | 869.8 | 843.1 | 812.0 | 822.5 |
| 77.5° | 701.9 | 680.8 | 670.2 | 654.7 | 639.1 |
| 80° | 524.1 | 518.5 | 508.0 | 492.4 | 481.8 |
| 82.5° | 356.2 | 356.2 | 351.2 | 330.1 | 330.1 |
| 85° | 214.5 | 209.5 | 204.5 | 188.4 | 183.4 |
| 87.5° | 94.5 | 83.9 | 73.4 | 57.8 | 52.2 |
| 90° | 2.8 | 35.1 | 58.5 | 73.4 | 79.0 |
| 92.5° | 73.4 | 61.6 | 70.3 | 76.2 | 79.0 |
| 95° | 190.3 | 93.6 | 114.1 | 129.1 | 126.0 |
| 97.5° | 342.8 | 102.7 | 149.3 | 158.3 | 161.1 |
| 100° | 518.8 | 117.3 | 167.0 | 190.3 | 196.3 |
| 102.5° | 712.0 | 706.4 | 172.9 | 205.0 | 214.0 |
| 105° | 890.8 | 978.9 | 178.9 | 210.9 | 222.7 |
| 107.5° | 1098.9 | 1172.0 | 184.8 | 216.8 | 228.6 |
| 110° | 1298.3 | 1359.6 | 512.9 | 219.9 | 231.4 |



TEST NUMBER: P906941

CATALOG NUMBER: DFN2DIP-SQ4F0-140D120US835-FLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1485.9 | 1538.4 | 1488.7 | 225.5 | 234.5 |
| 115° | 1684.9 | 1734.7 | 1808.1 | 451.3 | 240.5 |
| 117.5° | 1857.9 | 1916.4 | 1966.5 | 1547.1 | 779.5 |
| 120° | 2051.4 | 2095.2 | 2148.1 | 2183.3 | 1787.6 |
| 122.5° | 2215.3 | 2262.3 | 2321.1 | 2338.5 | 2341.6 |
| 125° | 2382.3 | 2420.6 | 2476.3 | 2496.8 | 2505.5 |
| 127.5° | 2534.7 | 2575.8 | 2620.0 | 2649.2 | 2652.0 |
| 130° | 2678.4 | 2725.4 | 2757.4 | 2789.8 | 2787.0 |
| 132.5° | 2824.9 | 2863.2 | 2895.2 | 2921.7 | 2918.9 |
| 135° | 2948.1 | 2995.1 | 3021.2 | 3050.8 | 3044.9 |
| 137.5° | 3076.9 | 3112.0 | 3141.6 | 3170.8 | 3162.1 |
| 140° | 3202.9 | 3226.5 | 3258.5 | 3285.0 | 3270.4 |
| 142.5° | 3308.6 | 3329.2 | 3367.1 | 3390.4 | 3375.8 |
| 145° | 3420.0 | 3416.9 | 3466.6 | 3487.2 | 3472.5 |
| 147.5° | 3516.4 | 3507.7 | 3557.5 | 3572.1 | 3560.6 |
| 150° | 3610.3 | 3589.8 | 3636.8 | 3654.2 | 3639.6 |
| 152.5° | 3689.3 | 3666.0 | 3709.9 | 3727.6 | 3707.1 |
| 155° | 3765.5 | 3739.4 | 3774.6 | 3792.0 | 3768.7 |
| 157.5° | 3827.1 | 3803.8 | 3830.3 | 3850.8 | 3827.1 |
| 160° | 3880.0 | 3862.3 | 3880.0 | 3897.4 | 3876.9 |
| 162.5° | 3926.7 | 3909.3 | 3923.9 | 3944.4 | 3918.0 |
| 165° | 3967.7 | 3950.3 | 3959.0 | 3979.6 | 3959.0 |
| 167.5° | 4000.1 | 3982.3 | 3991.4 | 4011.9 | 3985.5 |
| 170° | 4026.5 | 4008.8 | 4014.7 | 4035.2 | 4008.8 |
| 172.5° | 4043.9 | 4026.5 | 4032.5 | 4053.0 | 4026.5 |
| 175° | 4058.5 | 4038.0 | 4043.9 | 4064.5 | 4035.2 |
| 177.5° | 4064.5 | 4043.9 | 4047.1 | 4067.6 | 4041.2 |
| 180° | 4049.9 | 4049.9 | 4049.9 | 4049.9 | 4049.9 |



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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 | 12.29 | 13.19 | 13.22 | 14.13 | 15.35 | 11.85 | 12.75 | 12.77 | 13.69 | 14.90 |
| | 3H | 13.96 | 14.77 | 14.90 | 15.72 | 16.96 | 13.47 | 14.28 | 14.41 | 15.23 | 16.47 |
| | 4H | 14.55 | 15.32 | 15.50 | 16.27 | 17.52 | 14.06 | 14.82 | 15.01 | 15.78 | 17.02 |
| | 6H | 14.96 | 15.66 | 15.92 | 16.62 | 17.88 | 14.46 | 15.16 | 15.42 | 16.12 | 17.38 |
| | 8H | 15.07 | 15.73 | 16.03 | 16.71 | 17.97 | 14.56 | 15.23 | 15.53 | 16.21 | 17.47 |
| | 12H | 15.12 | 15.75 | 16.09 | 16.73 | 18.01 | 14.61 | 15.24 | 15.58 | 16.22 | 17.50 |
| 4H | 2H | 12.76 | 13.52 | 13.71 | 14.48 | 15.72 | 12.41 | 13.17 | 13.36 | 14.12 | 15.37 |
| | 3H | 14.63 | 15.27 | 15.60 | 16.25 | 17.52 | 14.23 | 14.86 | 15.19 | 15.85 | 17.11 |
| | 4H | 15.35 | 15.93 | 16.33 | 16.91 | 18.20 | 14.93 | 15.51 | 15.90 | 16.49 | 17.77 |
| | 6H | 15.87 | 16.38 | 16.86 | 17.38 | 18.66 | 15.44 | 15.94 | 16.43 | 16.95 | 18.23 |
| | 8H | 16.03 | 16.49 | 17.02 | 17.49 | 18.79 | 15.59 | 16.06 | 16.58 | 17.05 | 18.35 |
| | 12H | 16.10 | 16.53 | 17.11 | 17.54 | 18.84 | 15.65 | 16.08 | 16.66 | 17.09 | 18.39 |
| 8H | 4H | 15.55 | 16.02 | 16.54 | 17.02 | 18.32 | 15.18 | 15.64 | 16.16 | 16.64 | 17.94 |
| | 6H | 16.19 | 16.58 | 17.20 | 17.62 | 18.91 | 15.81 | 16.19 | 16.82 | 17.23 | 18.53 |
| | 8H | 16.41 | 16.76 | 17.44 | 17.78 | 19.10 | 16.02 | 16.36 | 17.04 | 17.39 | 18.70 |
| | 12H | 16.55 | 16.85 | 17.58 | 17.87 | 19.23 | 16.14 | 16.44 | 17.17 | 17.46 | 18.82 |
| 12H | 4H | 15.54 | 15.96 | 16.55 | 16.97 | 18.28 | 15.17 | 15.59 | 16.18 | 16.61 | 17.91 |
| | 6H | 16.22 | 16.56 | 17.24 | 17.59 | 18.90 | 15.85 | 16.19 | 16.87 | 17.22 | 18.53 |
| | 8H | 16.47 | 16.77 | 17.49 | 17.79 | 19.15 | 16.09 | 16.39 | 17.11 | 17.41 | 18.77 |