

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: P928562

Luminaire Tested: DFN2DIP-HX4F0-050D120US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928562
REPORT IS A COMBINATION OF REPORTS P900966 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-050D120US930-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

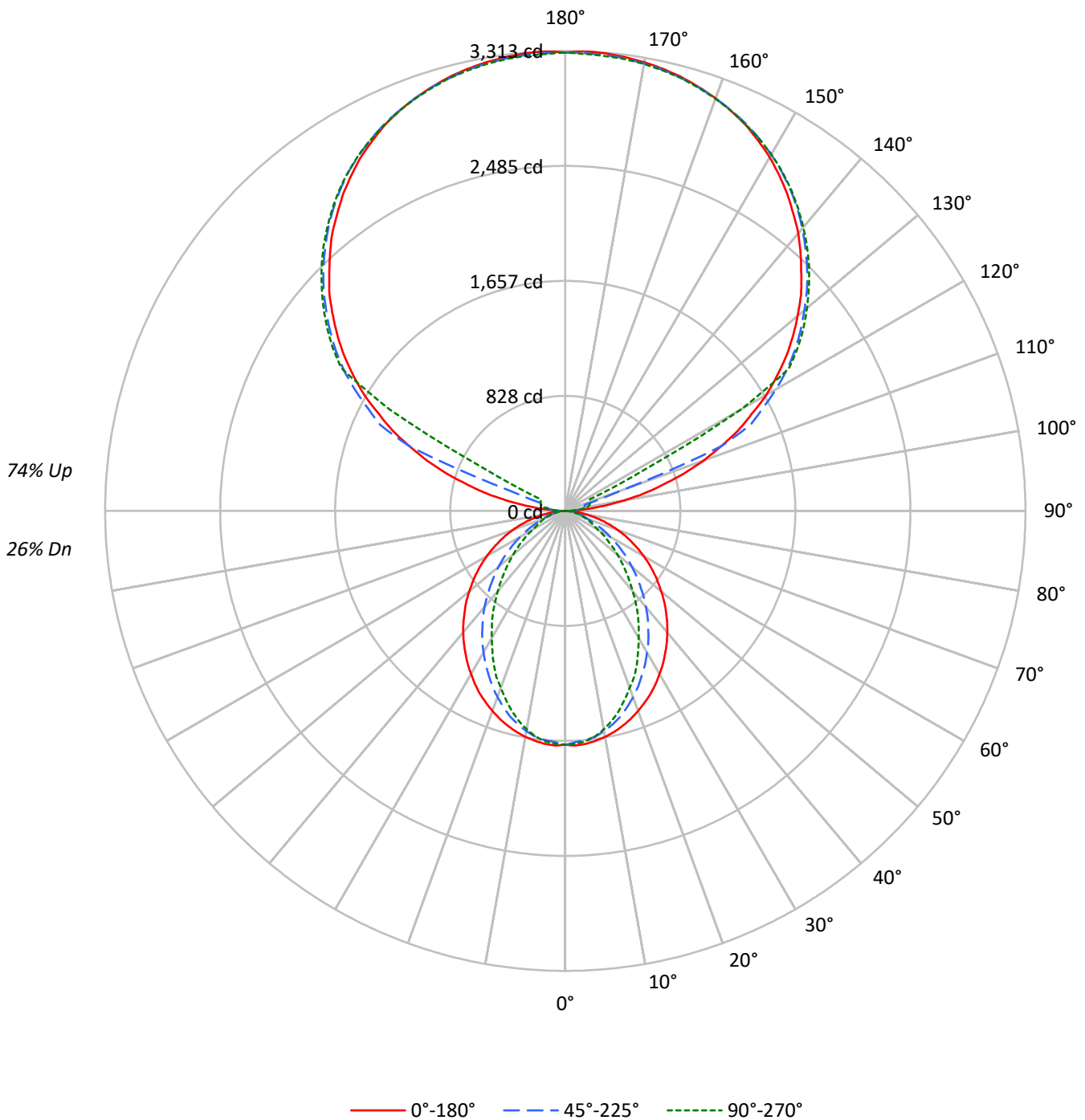
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13146.0 lumens
Efficiency: N/A
Efficacy: 94.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 139.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9957
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P928562
CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLLONL

Luminous Intensity Polar Plot





TEST NUMBER: P928562

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF | 20 | | | | 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 | 102 | 102 | 102 | 102 | 91 | 91 | 91 | 91 | 70 | 70 | 70 | 52 | 52 | 52 | 34 | 34 | 34 | 26 | | | | 26 |
| 1 | 93 | 89 | 85 | 82 | 83 | 79 | 76 | 74 | 62 | 60 | 58 | 46 | 44 | 43 | 31 | 30 | 29 | 23 | | | | 23 |
| 2 | 85 | 78 | 72 | 67 | 75 | 70 | 65 | 61 | 54 | 51 | 48 | 40 | 38 | 36 | 27 | 26 | 25 | 19 | | | | 19 |
| 3 | 77 | 68 | 62 | 56 | 69 | 61 | 56 | 51 | 48 | 44 | 41 | 36 | 33 | 31 | 24 | 23 | 22 | 17 | | | | 17 |
| 4 | 71 | 61 | 53 | 47 | 63 | 54 | 48 | 43 | 43 | 38 | 35 | 32 | 29 | 27 | 22 | 20 | 19 | 15 | | | | 15 |
| 5 | 65 | 54 | 46 | 41 | 58 | 49 | 42 | 37 | 38 | 34 | 30 | 29 | 26 | 23 | 20 | 18 | 17 | 13 | | | | 13 |
| 6 | 60 | 48 | 41 | 35 | 53 | 44 | 37 | 32 | 35 | 30 | 26 | 26 | 23 | 20 | 18 | 16 | 15 | 11 | | | | 11 |
| 7 | 55 | 44 | 36 | 31 | 49 | 39 | 33 | 28 | 31 | 27 | 23 | 24 | 20 | 18 | 17 | 15 | 13 | 10 | | | | 10 |
| 8 | 51 | 39 | 32 | 27 | 46 | 36 | 29 | 25 | 28 | 24 | 20 | 22 | 18 | 16 | 15 | 13 | 12 | 9 | | | | 9 |
| 9 | 48 | 36 | 29 | 24 | 42 | 33 | 26 | 22 | 26 | 21 | 18 | 20 | 17 | 14 | 14 | 12 | 11 | 8 | | | | 8 |
| 10 | 44 | 33 | 26 | 21 | 40 | 30 | 24 | 20 | 24 | 19 | 16 | 18 | 15 | 13 | 13 | 11 | 10 | 8 | | | | 8 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1252 | 1252 | 1252 |
| 5° | 1254 | 1233 | 1240 |
| 10° | 1242 | 1208 | 1200 |
| 15° | 1225 | 1169 | 1138 |
| 20° | 1203 | 1114 | 1061 |
| 25° | 1179 | 1052 | 987 |
| 30° | 1149 | 989 | 894 |
| 35° | 1118 | 921 | 811 |
| 40° | 1087 | 851 | 717 |
| 45° | 1051 | 773 | 631 |
| 50° | 1014 | 694 | 548 |
| 55° | 976 | 610 | 467 |
| 60° | 931 | 522 | 385 |
| 65° | 879 | 432 | 346 |
| 70° | 817 | 349 | 314 |
| 75° | 738 | 307 | 285 |
| 80° | 625 | 258 | 248 |
| 85° | 437 | 173 | 186 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1696 cd/sqm



TEST NUMBER: P928562

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLONL

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 157.8 | 1.2 |
| 10°-20° | 433.3 | 3.3 |
| 20°-30° | 608.4 | 4.6 |
| 30°-40° | 663.2 | 5.0 |
| 40°-50° | 609.5 | 4.6 |
| 50°-60° | 478.7 | 3.6 |
| 60°-70° | 311.6 | 2.4 |
| 70°-80° | 160.4 | 1.2 |
| 80°-90° | 46.7 | 0.4 |
| 90°-100° | 108.8 | 0.8 |
| 100°-110° | 405.7 | 3.1 |
| 110°-120° | 1076.0 | 8.2 |
| 120°-130° | 1784.7 | 13.6 |
| 130°-140° | 1895.8 | 14.4 |
| 140°-150° | 1761.9 | 13.4 |
| 150°-160° | 1416.5 | 10.8 |
| 160°-170° | 912.8 | 6.9 |
| 170°-180° | 314.2 | 2.4 |
| 0°-30° | 1199.5 | 9.1 |
| 0°-40° | 1862.7 | 14.2 |
| 0°-60° | 2950.9 | 22.4 |
| 0°-90° | 3469.6 | 26.4 |
| 90°-120° | 1590.6 | 12.1 |
| 90°-150° | 7033.0 | 53.5 |
| 90°-180° | 9676.0 | 73.6 |
| 0°-180° | 13146.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1684 | 1684 | 1684 | 1684 | 1684 | |
| 5° | 1684 | 1677 | 1657 | 1670 | 1666 | 160 |
| 15° | 1602 | 1585 | 1533 | 1504 | 1489 | 451 |
| 25° | 1454 | 1405 | 1305 | 1242 | 1219 | 669 |
| 35° | 1253 | 1175 | 1041 | 945 | 911 | 784 |
| 45° | 1024 | 922 | 762 | 654 | 617 | 791 |
| 55° | 779 | 660 | 495 | 404 | 375 | 696 |
| 65° | 526 | 402 | 265 | 213 | 209 | 521 |
| 75° | 280 | 174 | 122 | 111 | 110 | 297 |
| 85° | 66 | 34 | 29 | 29 | 29 | 75 |
| 90° | 2 | 29 | 48 | 60 | 64 | 12 |
| 95° | 155 | 76 | 93 | 105 | 103 | 184 |
| 105° | 726 | 798 | 146 | 172 | 182 | 776 |
| 115° | 1373 | 1414 | 1474 | 368 | 196 | 1352 |
| 125° | 1942 | 1973 | 2018 | 2035 | 2042 | 1732 |
| 135° | 2403 | 2441 | 2462 | 2486 | 2482 | 1856 |
| 145° | 2787 | 2785 | 2825 | 2842 | 2830 | 1743 |
| 155° | 3069 | 3048 | 3076 | 3090 | 3072 | 1414 |
| 165° | 3234 | 3220 | 3227 | 3243 | 3227 | 914 |
| 175° | 3308 | 3291 | 3296 | 3313 | 3289 | 315 |
| 180° | 3301 | 3301 | 3301 | 3301 | 3301 | |



TEST NUMBER: P928562

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1684.2 | 1684.2 | 1684.2 | 1684.2 | 1684.2 |
| 2.5° | 1691.8 | 1684.2 | 1667.4 | 1682.7 | 1679.6 |
| 5° | 1684.2 | 1676.6 | 1656.7 | 1670.4 | 1665.9 |
| 7.5° | 1670.4 | 1661.4 | 1640.0 | 1646.1 | 1638.4 |
| 10° | 1652.2 | 1641.5 | 1611.1 | 1606.4 | 1597.3 |
| 12.5° | 1629.3 | 1615.7 | 1574.4 | 1565.4 | 1548.5 |
| 15° | 1601.9 | 1585.1 | 1533.3 | 1504.4 | 1489.2 |
| 17.5° | 1569.9 | 1545.5 | 1481.4 | 1447.9 | 1423.5 |
| 20° | 1533.3 | 1502.8 | 1426.6 | 1388.6 | 1354.9 |
| 22.5° | 1493.7 | 1458.6 | 1370.2 | 1318.4 | 1295.6 |
| 25° | 1454.0 | 1405.2 | 1304.7 | 1242.2 | 1219.2 |
| 27.5° | 1406.9 | 1354.9 | 1243.7 | 1172.1 | 1137.0 |
| 30° | 1356.6 | 1298.5 | 1176.6 | 1098.9 | 1057.7 |
| 32.5° | 1307.7 | 1237.6 | 1112.7 | 1021.2 | 983.1 |
| 35° | 1252.9 | 1175.1 | 1041.1 | 945.0 | 911.4 |
| 37.5° | 1199.5 | 1115.7 | 974.0 | 868.7 | 830.7 |
| 40° | 1143.1 | 1051.8 | 903.8 | 795.6 | 756.0 |
| 42.5° | 1085.3 | 987.7 | 833.7 | 720.9 | 682.9 |
| 45° | 1024.3 | 922.1 | 762.1 | 653.8 | 617.2 |
| 47.5° | 966.3 | 858.2 | 693.6 | 585.3 | 551.8 |
| 50° | 902.4 | 794.1 | 626.5 | 521.2 | 489.3 |
| 52.5° | 839.8 | 725.4 | 562.4 | 461.9 | 432.9 |
| 55° | 778.8 | 659.9 | 495.3 | 403.9 | 375.0 |
| 57.5° | 716.4 | 594.5 | 435.9 | 350.6 | 326.2 |
| 60° | 652.3 | 530.4 | 373.4 | 295.8 | 271.3 |
| 62.5° | 589.9 | 468.0 | 320.1 | 246.9 | 234.8 |
| 65° | 525.8 | 402.4 | 265.2 | 213.4 | 208.8 |
| 67.5° | 464.9 | 341.4 | 213.4 | 187.4 | 182.9 |
| 70° | 400.9 | 282.0 | 176.8 | 161.5 | 155.4 |
| 72.5° | 339.9 | 227.1 | 147.8 | 135.7 | 132.6 |
| 75° | 280.4 | 173.7 | 121.9 | 111.2 | 109.8 |
| 77.5° | 221.0 | 123.4 | 96.1 | 89.9 | 86.8 |
| 80° | 166.1 | 88.4 | 73.1 | 67.1 | 67.1 |
| 82.5° | 115.8 | 59.5 | 50.3 | 47.2 | 47.2 |
| 85° | 65.5 | 33.5 | 28.9 | 28.9 | 28.9 |
| 87.5° | 24.4 | 12.1 | 12.1 | 10.7 | 10.7 |
| 90° | 2.3 | 28.6 | 47.7 | 59.8 | 64.4 |
| 92.5° | 59.8 | 50.2 | 57.3 | 62.1 | 64.4 |
| 95° | 155.1 | 76.3 | 93.0 | 105.2 | 102.7 |
| 97.5° | 279.4 | 83.7 | 121.7 | 129.0 | 131.3 |
| 100° | 422.8 | 95.6 | 136.1 | 155.1 | 160.0 |
| 102.5° | 580.3 | 575.7 | 140.9 | 167.1 | 174.4 |
| 105° | 726.0 | 797.8 | 145.8 | 171.9 | 181.5 |
| 107.5° | 895.6 | 955.2 | 150.6 | 176.7 | 186.3 |
| 110° | 1058.1 | 1108.1 | 418.0 | 179.2 | 188.6 |



TEST NUMBER: P928562

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1211.0 | 1253.8 | 1213.3 | 183.8 | 191.1 |
| 115° | 1373.2 | 1413.8 | 1473.6 | 367.8 | 196.0 |
| 117.5° | 1514.2 | 1561.9 | 1602.7 | 1260.9 | 635.3 |
| 120° | 1671.9 | 1707.6 | 1750.7 | 1779.4 | 1456.9 |
| 122.5° | 1805.5 | 1843.8 | 1891.7 | 1905.9 | 1908.4 |
| 125° | 1941.6 | 1972.8 | 2018.2 | 2034.9 | 2042.0 |
| 127.5° | 2065.8 | 2099.3 | 2135.3 | 2159.1 | 2161.4 |
| 130° | 2182.9 | 2221.2 | 2247.3 | 2273.7 | 2271.4 |
| 132.5° | 2302.3 | 2333.5 | 2359.6 | 2381.2 | 2378.9 |
| 135° | 2402.7 | 2441.0 | 2462.3 | 2486.4 | 2481.6 |
| 137.5° | 2507.7 | 2536.3 | 2560.4 | 2584.2 | 2577.1 |
| 140° | 2610.4 | 2629.6 | 2655.7 | 2677.3 | 2665.4 |
| 142.5° | 2696.5 | 2713.3 | 2744.2 | 2763.2 | 2751.3 |
| 145° | 2787.3 | 2784.8 | 2825.3 | 2842.1 | 2830.1 |
| 147.5° | 2865.9 | 2858.8 | 2899.4 | 2911.3 | 2901.9 |
| 150° | 2942.4 | 2925.7 | 2964.0 | 2978.2 | 2966.3 |
| 152.5° | 3006.8 | 2987.8 | 3023.6 | 3038.0 | 3021.3 |
| 155° | 3068.9 | 3047.6 | 3076.3 | 3090.5 | 3071.5 |
| 157.5° | 3119.1 | 3100.1 | 3121.7 | 3138.4 | 3119.1 |
| 160° | 3162.2 | 3147.8 | 3162.2 | 3176.4 | 3159.7 |
| 162.5° | 3200.3 | 3186.1 | 3198.0 | 3214.7 | 3193.2 |
| 165° | 3233.7 | 3219.5 | 3226.6 | 3243.4 | 3226.6 |
| 167.5° | 3260.1 | 3245.6 | 3253.0 | 3269.7 | 3248.2 |
| 170° | 3281.6 | 3267.2 | 3272.0 | 3288.7 | 3267.2 |
| 172.5° | 3295.8 | 3281.6 | 3286.5 | 3303.2 | 3281.6 |
| 175° | 3307.7 | 3291.0 | 3295.8 | 3312.6 | 3288.7 |
| 177.5° | 3312.6 | 3295.8 | 3298.4 | 3315.1 | 3293.6 |
| 180° | 3300.7 | 3300.7 | 3300.7 | 3300.7 | 3300.7 |



TEST NUMBER: P928562
 CATALOG NUMBER: DFN2DIP-HX4F0-050D120US930-RLONL

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 | 5.18 | 5.85 | 6.32 | 6.97 | 8.55 | 1.15 | 1.82 | 2.29 | 2.95 | 4.52 |
| | 3H | 6.84 | 7.44 | 7.99 | 8.58 | 10.17 | 2.33 | 2.92 | 3.48 | 4.06 | 5.65 |
| | 4H | 7.44 | 8.01 | 8.60 | 9.15 | 10.74 | 2.77 | 3.34 | 3.93 | 4.47 | 6.07 |
| | 6H | 7.86 | 8.38 | 9.02 | 9.52 | 11.12 | 3.08 | 3.61 | 4.25 | 4.75 | 6.35 |
| | 8H | 7.98 | 8.48 | 9.15 | 9.63 | 11.23 | 3.17 | 3.67 | 4.34 | 4.82 | 6.42 |
| | 12H | 8.04 | 8.51 | 9.21 | 9.65 | 11.28 | 3.21 | 3.68 | 4.38 | 4.83 | 6.45 |
| 4H | 2H | 5.17 | 5.74 | 6.34 | 6.88 | 8.47 | 1.72 | 2.29 | 2.89 | 3.43 | 5.02 |
| | 3H | 6.99 | 7.46 | 8.16 | 8.62 | 10.23 | 3.06 | 3.53 | 4.23 | 4.70 | 6.30 |
| | 4H | 7.68 | 8.11 | 8.85 | 9.26 | 10.89 | 3.60 | 4.04 | 4.78 | 5.19 | 6.82 |
| | 6H | 8.18 | 8.56 | 9.36 | 9.73 | 11.34 | 4.02 | 4.39 | 5.19 | 5.56 | 7.18 |
| | 8H | 8.36 | 8.70 | 9.53 | 9.87 | 11.50 | 4.14 | 4.49 | 5.32 | 5.66 | 7.29 |
| | 12H | 8.44 | 8.76 | 9.64 | 9.93 | 11.57 | 4.20 | 4.52 | 5.39 | 5.69 | 7.33 |
| 8H | 4H | 7.63 | 7.98 | 8.81 | 9.14 | 10.78 | 3.87 | 4.22 | 5.05 | 5.38 | 7.02 |
| | 6H | 8.19 | 8.48 | 9.39 | 9.69 | 11.32 | 4.39 | 4.67 | 5.58 | 5.88 | 7.51 |
| | 8H | 8.41 | 8.66 | 9.61 | 9.84 | 11.49 | 4.58 | 4.83 | 5.78 | 6.01 | 7.66 |
| | 12H | 8.54 | 8.76 | 9.75 | 9.94 | 11.63 | 4.69 | 4.91 | 5.90 | 6.09 | 7.78 |
| 12H | 4H | 7.58 | 7.89 | 8.77 | 9.07 | 10.70 | 3.87 | 4.19 | 5.06 | 5.36 | 7.00 |
| | 6H | 8.17 | 8.42 | 9.37 | 9.60 | 11.25 | 4.44 | 4.69 | 5.64 | 5.87 | 7.52 |
| | 8H | 8.38 | 8.60 | 9.59 | 9.78 | 11.47 | 4.64 | 4.86 | 5.85 | 6.04 | 7.72 |