

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: P927049

Luminaire Tested: DFN2DIP-HX4F0-080D120US830-RLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927049
REPORT IS A COMBINATION OF REPORTS P899452 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D120US830-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

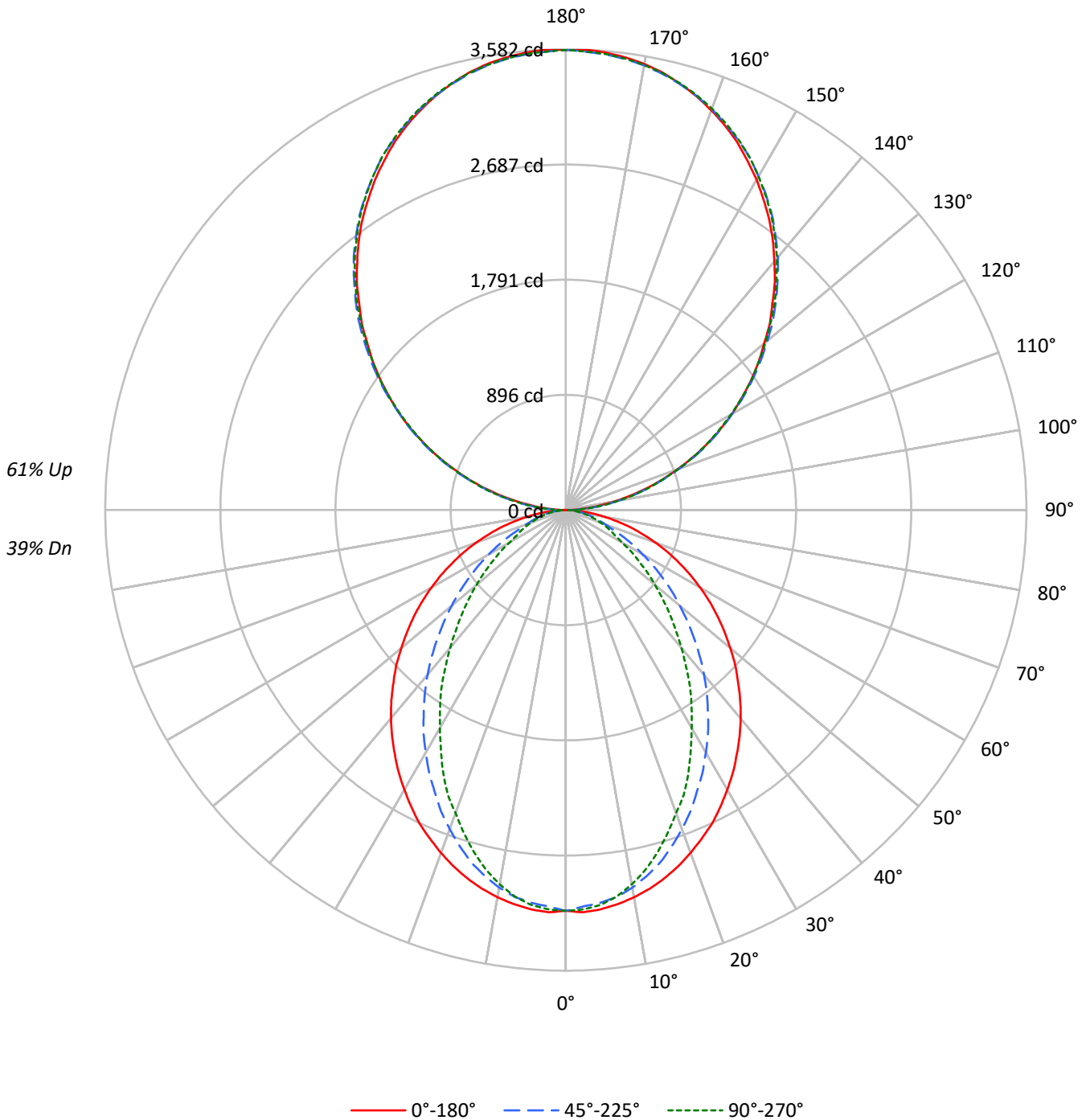
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16418.3 lumens
Efficiency: N/A
Efficacy: 95.1 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): 172.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P927049
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Luminous Intensity Polar Plot





TEST NUMBER: P927049

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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 | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 | 39 | | | |
| 1 | 96 | 92 | 88 | 85 | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 40 | 40 | 34 | | | |
| 2 | 87 | 80 | 75 | 70 | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 | 29 | | | |
| 3 | 80 | 71 | 64 | 58 | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 | 25 | | | |
| 4 | 73 | 63 | 55 | 50 | 66 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 | 22 | | | |
| 5 | 67 | 56 | 48 | 43 | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 24 | 22 | 19 | | | |
| 6 | 62 | 51 | 43 | 37 | 56 | 46 | 40 | 35 | 39 | 33 | 30 | 31 | 28 | 25 | 25 | 22 | 20 | 17 | | | |
| 7 | 57 | 46 | 38 | 33 | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 22 | 20 | 18 | 15 | | | |
| 8 | 53 | 41 | 34 | 29 | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 | 14 | | | |
| 9 | 50 | 38 | 31 | 26 | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 | 12 | | | |
| 10 | 46 | 35 | 28 | 23 | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 | 11 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2317 | 2317 | 2317 |
| 5° | 2321 | 2281 | 2295 |
| 10° | 2298 | 2236 | 2221 |
| 15° | 2267 | 2162 | 2105 |
| 20° | 2225 | 2061 | 1964 |
| 25° | 2182 | 1947 | 1827 |
| 30° | 2125 | 1830 | 1653 |
| 35° | 2069 | 1704 | 1501 |
| 40° | 2012 | 1574 | 1326 |
| 45° | 1945 | 1430 | 1168 |
| 50° | 1877 | 1284 | 1013 |
| 55° | 1805 | 1128 | 865 |
| 60° | 1722 | 965 | 712 |
| 65° | 1627 | 799 | 641 |
| 70° | 1511 | 645 | 580 |
| 75° | 1366 | 569 | 528 |
| 80° | 1156 | 478 | 458 |
| 85° | 808 | 320 | 345 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2696 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 292.1 | 1.8 |
| 10°-20° | 801.8 | 4.9 |
| 20°-30° | 1125.7 | 6.9 |
| 30°-40° | 1227.0 | 7.5 |
| 40°-50° | 1127.8 | 6.9 |
| 50°-60° | 885.7 | 5.4 |
| 60°-70° | 576.5 | 3.5 |
| 70°-80° | 296.8 | 1.8 |
| 80°-90° | 85.9 | 0.5 |
| 90°-100° | 221.3 | 1.3 |
| 100°-110° | 703.3 | 4.3 |
| 110°-120° | 1203.5 | 7.3 |
| 120°-130° | 1582.8 | 9.6 |
| 130°-140° | 1776.6 | 10.8 |
| 140°-150° | 1742.2 | 10.6 |
| 150°-160° | 1461.5 | 8.9 |
| 160°-170° | 969.2 | 5.9 |
| 170°-180° | 338.8 | 2.1 |
| 0°-30° | 2219.5 | 13.5 |
| 0°-40° | 3446.5 | 21.0 |
| 0°-60° | 5460.0 | 33.3 |
| 0°-90° | 6419.2 | 39.1 |
| 90°-120° | 2128.1 | 13.0 |
| 90°-150° | 7229.8 | 44.0 |
| 90°-180° | 9999.0 | 60.9 |
| 0°-180° | 16418.3 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3116 | 3116 | 3116 | 3116 | 3116 | |
| 5° | 3116 | 3102 | 3065 | 3091 | 3082 | 295 |
| 15° | 2964 | 2933 | 2837 | 2784 | 2755 | 835 |
| 25° | 2690 | 2600 | 2414 | 2299 | 2256 | 1237 |
| 35° | 2318 | 2174 | 1926 | 1749 | 1686 | 1451 |
| 45° | 1895 | 1706 | 1410 | 1210 | 1142 | 1464 |
| 55° | 1441 | 1221 | 916 | 747 | 694 | 1288 |
| 65° | 973 | 744 | 491 | 395 | 386 | 965 |
| 75° | 519 | 321 | 226 | 206 | 203 | 549 |
| 85° | 121 | 62 | 54 | 54 | 54 | 139 |
| 90° | 3 | 39 | 106 | 99 | 102 | 16 |
| 95° | 157 | 188 | 193 | 193 | 188 | 175 |
| 105° | 649 | 658 | 664 | 670 | 670 | 685 |
| 115° | 1208 | 1225 | 1220 | 1216 | 1208 | 1195 |
| 125° | 1757 | 1784 | 1775 | 1765 | 1762 | 1570 |
| 135° | 2272 | 2306 | 2312 | 2309 | 2300 | 1756 |
| 145° | 2758 | 2780 | 2797 | 2800 | 2789 | 1724 |
| 155° | 3154 | 3163 | 3172 | 3188 | 3178 | 1452 |
| 165° | 3431 | 3428 | 3428 | 3450 | 3435 | 968 |
| 175° | 3570 | 3562 | 3555 | 3577 | 3559 | 339 |
| 180° | 3577 | 3577 | 3577 | 3577 | 3577 | |



TEST NUMBER: P927049

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US830-RLFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3116.3 | 3116.3 | 3116.3 | 3116.3 | 3116.3 |
| 2.5° | 3130.3 | 3116.3 | 3085.2 | 3113.5 | 3107.9 |
| 5° | 3116.3 | 3102.2 | 3065.4 | 3090.8 | 3082.4 |
| 7.5° | 3090.8 | 3074.1 | 3034.6 | 3045.7 | 3031.6 |
| 10° | 3057.0 | 3037.3 | 2981.0 | 2972.4 | 2955.6 |
| 12.5° | 3014.9 | 2989.4 | 2913.1 | 2896.3 | 2865.2 |
| 15° | 2964.0 | 2932.9 | 2837.1 | 2783.6 | 2755.4 |
| 17.5° | 2904.7 | 2859.5 | 2741.1 | 2679.2 | 2633.9 |
| 20° | 2837.1 | 2780.6 | 2639.7 | 2569.3 | 2507.0 |
| 22.5° | 2763.8 | 2698.8 | 2535.2 | 2439.5 | 2397.2 |
| 25° | 2690.5 | 2600.2 | 2414.0 | 2298.6 | 2256.1 |
| 27.5° | 2603.1 | 2507.0 | 2301.2 | 2168.7 | 2103.8 |
| 30° | 2510.1 | 2402.6 | 2177.1 | 2033.4 | 1957.1 |
| 32.5° | 2419.7 | 2289.9 | 2058.9 | 1889.5 | 1818.9 |
| 35° | 2318.3 | 2174.3 | 1926.3 | 1748.6 | 1686.3 |
| 37.5° | 2219.5 | 2064.3 | 1802.2 | 1607.3 | 1537.0 |
| 40° | 2115.2 | 1946.1 | 1672.3 | 1472.1 | 1398.8 |
| 42.5° | 2008.0 | 1827.6 | 1542.7 | 1333.9 | 1263.5 |
| 45° | 1895.2 | 1706.1 | 1410.2 | 1209.7 | 1142.1 |
| 47.5° | 1788.1 | 1587.9 | 1283.3 | 1082.8 | 1020.9 |
| 50° | 1669.5 | 1469.5 | 1159.2 | 964.4 | 905.4 |
| 52.5° | 1553.8 | 1342.2 | 1040.6 | 854.6 | 801.0 |
| 55° | 1441.0 | 1221.1 | 916.5 | 747.4 | 693.9 |
| 57.5° | 1325.5 | 1099.9 | 806.7 | 648.7 | 603.5 |
| 60° | 1207.0 | 981.4 | 690.9 | 547.2 | 502.1 |
| 62.5° | 1091.5 | 865.9 | 592.2 | 456.9 | 434.5 |
| 65° | 973.0 | 744.4 | 490.7 | 395.0 | 386.2 |
| 67.5° | 860.2 | 631.7 | 395.0 | 346.7 | 338.5 |
| 70° | 741.7 | 521.9 | 327.0 | 298.9 | 287.6 |
| 72.5° | 628.9 | 420.1 | 273.5 | 251.1 | 245.3 |
| 75° | 518.8 | 321.4 | 225.6 | 205.8 | 203.2 |
| 77.5° | 409.0 | 228.3 | 177.8 | 166.4 | 160.7 |
| 80° | 307.3 | 163.7 | 135.2 | 124.1 | 124.1 |
| 82.5° | 214.2 | 110.1 | 93.0 | 87.4 | 87.4 |
| 85° | 121.2 | 61.9 | 53.5 | 53.5 | 53.5 |
| 87.5° | 45.1 | 22.4 | 22.4 | 19.8 | 19.8 |
| 90° | 3.2 | 38.8 | 105.7 | 99.2 | 102.4 |
| 92.5° | 66.8 | 90.6 | 93.8 | 97.1 | 97.1 |
| 95° | 157.4 | 187.7 | 193.0 | 193.0 | 187.7 |
| 97.5° | 262.0 | 290.1 | 302.0 | 302.0 | 302.0 |
| 100° | 382.8 | 407.6 | 416.2 | 416.2 | 413.0 |
| 102.5° | 510.1 | 528.4 | 540.2 | 543.5 | 540.2 |
| 105° | 649.2 | 657.8 | 664.3 | 669.6 | 669.6 |
| 107.5° | 787.2 | 800.2 | 800.2 | 802.3 | 787.2 |
| 110° | 920.9 | 938.2 | 938.2 | 938.2 | 929.6 |



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CATALOG NUMBER: DFN2DIP-HX4F0-080D120US830-RLFL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1065.4 | 1083.8 | 1080.5 | 1071.9 | 1065.4 |
| 115° | 1207.7 | 1225.1 | 1219.6 | 1216.4 | 1207.7 |
| 117.5° | 1349.0 | 1372.8 | 1357.7 | 1349.0 | 1340.4 |
| 120° | 1491.4 | 1515.1 | 1491.4 | 1491.4 | 1481.7 |
| 122.5° | 1620.8 | 1651.0 | 1635.9 | 1627.2 | 1620.8 |
| 125° | 1756.6 | 1783.6 | 1775.0 | 1765.3 | 1762.0 |
| 127.5° | 1889.3 | 1922.7 | 1910.8 | 1897.9 | 1889.3 |
| 130° | 2013.3 | 2052.1 | 2046.7 | 2040.2 | 2028.4 |
| 132.5° | 2152.4 | 2182.6 | 2184.7 | 2169.6 | 2161.1 |
| 135° | 2272.1 | 2305.5 | 2312.0 | 2308.7 | 2300.2 |
| 137.5° | 2405.8 | 2432.8 | 2438.2 | 2436.0 | 2423.1 |
| 140° | 2523.4 | 2550.3 | 2565.4 | 2565.4 | 2553.5 |
| 142.5° | 2644.2 | 2671.1 | 2679.7 | 2682.9 | 2671.1 |
| 145° | 2758.4 | 2780.0 | 2797.2 | 2800.5 | 2788.7 |
| 147.5° | 2860.9 | 2887.8 | 2900.8 | 2906.2 | 2894.3 |
| 150° | 2966.6 | 2984.9 | 2996.8 | 3006.5 | 2996.8 |
| 152.5° | 3060.4 | 3078.7 | 3093.9 | 3105.7 | 3093.9 |
| 155° | 3154.2 | 3162.8 | 3172.5 | 3187.6 | 3177.9 |
| 157.5° | 3235.1 | 3241.5 | 3246.9 | 3268.5 | 3253.4 |
| 160° | 3307.3 | 3313.8 | 3317.0 | 3335.4 | 3322.4 |
| 162.5° | 3374.2 | 3374.2 | 3377.4 | 3397.9 | 3382.8 |
| 165° | 3431.4 | 3428.2 | 3428.2 | 3449.6 | 3434.6 |
| 167.5° | 3483.1 | 3473.4 | 3473.4 | 3495.0 | 3479.9 |
| 170° | 3521.9 | 3513.3 | 3510.1 | 3531.6 | 3513.3 |
| 172.5° | 3548.9 | 3540.2 | 3537.0 | 3558.6 | 3540.2 |
| 175° | 3570.5 | 3561.8 | 3555.4 | 3576.9 | 3558.6 |
| 177.5° | 3582.3 | 3573.7 | 3567.2 | 3585.6 | 3567.2 |
| 180° | 3576.9 | 3576.9 | 3576.9 | 3576.9 | 3576.9 |



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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 | 8.95 | 9.70 | 10.01 | 10.75 | 12.18 | 4.93 | 5.68 | 5.98 | 6.73 | 8.15 |
| | 3H | 10.63 | 11.30 | 11.69 | 12.36 | 13.80 | 6.11 | 6.78 | 7.17 | 7.84 | 9.28 |
| | 4H | 11.23 | 11.87 | 12.30 | 12.93 | 14.38 | 6.56 | 7.19 | 7.63 | 8.26 | 9.70 |
| | 6H | 11.65 | 12.23 | 12.73 | 13.30 | 14.76 | 6.88 | 7.46 | 7.96 | 8.53 | 9.99 |
| | 8H | 11.77 | 12.33 | 12.86 | 13.41 | 14.86 | 6.97 | 7.52 | 8.05 | 8.60 | 10.06 |
| | 12H | 11.83 | 12.36 | 12.92 | 13.44 | 14.91 | 7.01 | 7.54 | 8.10 | 8.61 | 10.09 |
| 4H | 2H | 8.96 | 9.60 | 10.04 | 10.66 | 12.11 | 5.51 | 6.15 | 6.59 | 7.21 | 8.66 |
| | 3H | 10.79 | 11.31 | 11.87 | 12.40 | 13.86 | 6.86 | 7.39 | 7.94 | 8.48 | 9.93 |
| | 4H | 11.48 | 11.96 | 12.57 | 13.04 | 14.52 | 7.40 | 7.89 | 8.50 | 8.97 | 10.45 |
| | 6H | 11.99 | 12.40 | 13.09 | 13.51 | 14.98 | 7.82 | 8.24 | 8.92 | 9.34 | 10.81 |
| | 8H | 12.16 | 12.55 | 13.26 | 13.64 | 15.13 | 7.95 | 8.34 | 9.05 | 9.43 | 10.92 |
| | 12H | 12.25 | 12.60 | 13.37 | 13.71 | 15.21 | 8.01 | 8.36 | 9.13 | 9.47 | 10.96 |
| 8H | 4H | 11.44 | 11.82 | 12.54 | 12.92 | 14.41 | 7.68 | 8.07 | 8.78 | 9.16 | 10.65 |
| | 6H | 12.00 | 12.32 | 13.12 | 13.46 | 14.95 | 8.20 | 8.52 | 9.32 | 9.65 | 11.14 |
| | 8H | 12.22 | 12.50 | 13.35 | 13.62 | 15.12 | 8.39 | 8.67 | 9.52 | 9.79 | 11.29 |
| | 12H | 12.35 | 12.60 | 13.49 | 13.72 | 15.26 | 8.51 | 8.75 | 9.64 | 9.87 | 11.41 |
| 12H | 4H | 11.39 | 11.74 | 12.50 | 12.84 | 14.34 | 7.68 | 8.03 | 8.80 | 9.14 | 10.63 |
| | 6H | 11.98 | 12.26 | 13.10 | 13.38 | 14.88 | 8.25 | 8.53 | 9.37 | 9.64 | 11.15 |
| | 8H | 12.20 | 12.44 | 13.33 | 13.56 | 15.10 | 8.45 | 8.70 | 9.59 | 9.82 | 11.36 |