

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: P916968

Luminaire Tested: DFN2DIP-PN4F0-090D050US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916968
REPORT IS A COMBINATION OF REPORTS P899637 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-090D050US930-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

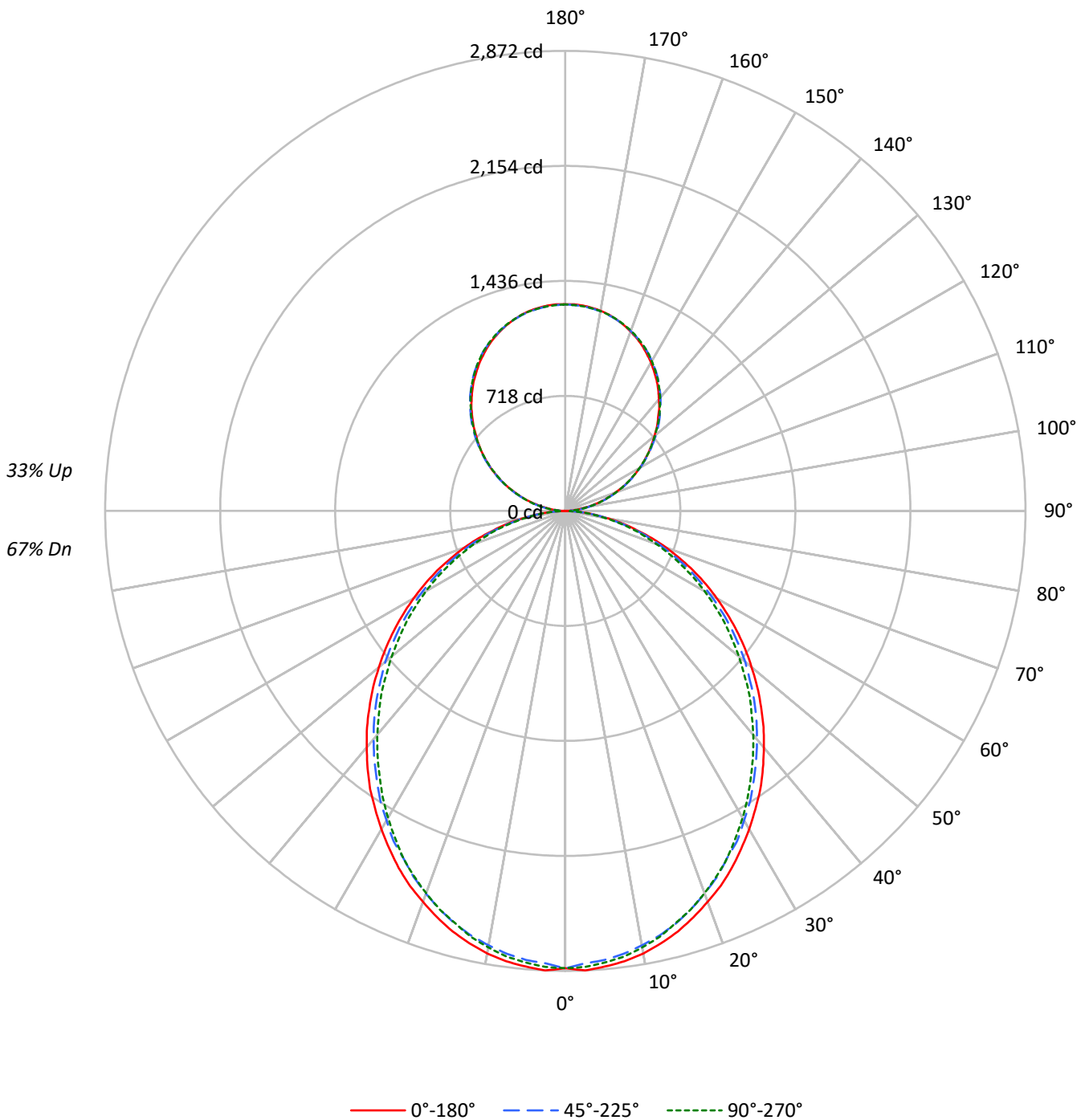
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10872.0 lumens
Efficiency: N/A
Efficacy: 86.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 126
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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: P916968

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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 | 111 | 111 | 111 | 111 | 105 | 105 | 105 | 105 | 93 | 93 | 93 | 82 | 82 | 82 | 72 | 72 | 72 | 67 | | | | 67 |
| 1 | 102 | 97 | 93 | 90 | 96 | 92 | 88 | 85 | 81 | 79 | 76 | 72 | 70 | 68 | 63 | 62 | 61 | 56 | | | | 56 |
| 2 | 93 | 85 | 79 | 73 | 87 | 80 | 75 | 70 | 71 | 67 | 63 | 63 | 60 | 57 | 56 | 53 | 51 | 47 | | | | 47 |
| 3 | 84 | 75 | 67 | 61 | 79 | 71 | 64 | 58 | 63 | 58 | 53 | 56 | 52 | 48 | 49 | 46 | 43 | 40 | | | | 40 |
| 4 | 77 | 66 | 58 | 52 | 73 | 63 | 55 | 50 | 56 | 50 | 45 | 50 | 45 | 41 | 44 | 41 | 37 | 34 | | | | 34 |
| 5 | 71 | 59 | 51 | 45 | 67 | 56 | 48 | 43 | 50 | 44 | 39 | 45 | 40 | 36 | 40 | 36 | 33 | 30 | | | | 30 |
| 6 | 66 | 53 | 45 | 39 | 62 | 50 | 43 | 37 | 45 | 39 | 34 | 41 | 35 | 32 | 36 | 32 | 29 | 26 | | | | 26 |
| 7 | 61 | 48 | 40 | 34 | 57 | 46 | 38 | 33 | 41 | 35 | 30 | 37 | 32 | 28 | 33 | 29 | 26 | 23 | | | | 23 |
| 8 | 56 | 44 | 36 | 30 | 53 | 42 | 34 | 29 | 38 | 32 | 27 | 34 | 29 | 25 | 30 | 26 | 23 | 21 | | | | 21 |
| 9 | 53 | 40 | 32 | 27 | 50 | 38 | 31 | 26 | 35 | 29 | 24 | 31 | 26 | 23 | 28 | 24 | 21 | 19 | | | | 19 |
| 10 | 49 | 37 | 29 | 24 | 46 | 35 | 28 | 24 | 32 | 26 | 22 | 29 | 24 | 20 | 26 | 22 | 19 | 17 | | | | 17 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2084 | 2084 | 2084 |
| 5° | 2087 | 2055 | 2069 |
| 10° | 2071 | 2028 | 2042 |
| 15° | 2040 | 1995 | 1998 |
| 20° | 1999 | 1949 | 1954 |
| 25° | 1958 | 1894 | 1902 |
| 30° | 1907 | 1842 | 1837 |
| 35° | 1858 | 1782 | 1768 |
| 40° | 1798 | 1720 | 1702 |
| 45° | 1739 | 1659 | 1634 |
| 50° | 1673 | 1595 | 1556 |
| 55° | 1605 | 1520 | 1484 |
| 60° | 1528 | 1432 | 1402 |
| 65° | 1444 | 1340 | 1305 |
| 70° | 1336 | 1229 | 1201 |
| 75° | 1188 | 1096 | 1106 |
| 80° | 1009 | 926 | 922 |
| 85° | 730 | 632 | 617 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1739 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 268.7 | 2.5 |
| 10°-20° | 756.1 | 7.0 |
| 20°-30° | 1111.2 | 10.2 |
| 30°-40° | 1290.5 | 11.9 |
| 40°-50° | 1288.9 | 11.9 |
| 50°-60° | 1123.9 | 10.3 |
| 60°-70° | 830.8 | 7.6 |
| 70°-80° | 470.1 | 4.3 |
| 80°-90° | 127.7 | 1.2 |
| 90°-100° | 79.8 | 0.7 |
| 100°-110° | 253.5 | 2.3 |
| 110°-120° | 433.8 | 4.0 |
| 120°-130° | 570.5 | 5.2 |
| 130°-140° | 640.4 | 5.9 |
| 140°-150° | 627.9 | 5.8 |
| 150°-160° | 526.8 | 4.8 |
| 160°-170° | 349.3 | 3.2 |
| 170°-180° | 122.1 | 1.1 |
| 0°-30° | 2136.0 | 19.6 |
| 0°-40° | 3426.5 | 31.5 |
| 0°-60° | 5839.4 | 53.7 |
| 0°-90° | 7268.0 | 66.9 |
| 90°-120° | 767.0 | 7.1 |
| 90°-150° | 2605.8 | 24.0 |
| 90°-180° | 3604.0 | 33.1 |
| 0°-180° | 10872.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2855 | 2855 | 2855 | 2855 | 2855 | |
| 5° | 2855 | 2844 | 2814 | 2836 | 2831 | 271 |
| 15° | 2718 | 2702 | 2666 | 2677 | 2663 | 765 |
| 25° | 2460 | 2438 | 2391 | 2397 | 2391 | 1132 |
| 35° | 2122 | 2095 | 2051 | 2034 | 2021 | 1325 |
| 45° | 1727 | 1708 | 1666 | 1636 | 1625 | 1333 |
| 55° | 1307 | 1290 | 1257 | 1225 | 1211 | 1169 |
| 65° | 881 | 865 | 837 | 813 | 799 | 871 |
| 75° | 461 | 456 | 442 | 426 | 431 | 492 |
| 85° | 112 | 110 | 107 | 99 | 96 | 125 |
| 90° | 1 | 14 | 38 | 36 | 37 | 10 |
| 95° | 57 | 68 | 70 | 70 | 68 | 63 |
| 105° | 234 | 237 | 240 | 241 | 241 | 247 |
| 115° | 435 | 442 | 440 | 438 | 435 | 431 |
| 125° | 633 | 643 | 640 | 636 | 635 | 566 |
| 135° | 819 | 831 | 833 | 832 | 829 | 633 |
| 145° | 994 | 1002 | 1008 | 1009 | 1005 | 621 |
| 155° | 1137 | 1140 | 1144 | 1149 | 1145 | 523 |
| 165° | 1237 | 1236 | 1236 | 1243 | 1238 | 349 |
| 175° | 1287 | 1284 | 1282 | 1289 | 1283 | 122 |
| 180° | 1289 | 1289 | 1289 | 1289 | 1289 | |



TEST NUMBER: P916968

CATALOG NUMBER: DFN2DIP-PN4F0-090D050US930-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2855.1 | 2855.1 | 2855.1 | 2855.1 | 2855.1 |
| 2.5° | 2871.7 | 2858.0 | 2827.8 | 2855.1 | 2849.9 |
| 5° | 2855.1 | 2844.3 | 2814.1 | 2835.9 | 2830.6 |
| 7.5° | 2835.9 | 2819.6 | 2789.3 | 2811.5 | 2805.9 |
| 10° | 2805.9 | 2786.7 | 2753.8 | 2775.6 | 2767.4 |
| 12.5° | 2764.5 | 2748.2 | 2715.4 | 2729.0 | 2723.5 |
| 15° | 2718.0 | 2701.7 | 2665.8 | 2676.9 | 2663.2 |
| 17.5° | 2660.2 | 2643.9 | 2608.1 | 2621.8 | 2608.1 |
| 20° | 2597.1 | 2580.7 | 2542.3 | 2550.4 | 2539.7 |
| 22.5° | 2534.1 | 2509.4 | 2473.5 | 2473.5 | 2468.0 |
| 25° | 2459.8 | 2438.0 | 2391.4 | 2396.7 | 2391.4 |
| 27.5° | 2377.4 | 2358.2 | 2322.7 | 2314.6 | 2300.9 |
| 30° | 2295.3 | 2273.1 | 2232.0 | 2223.9 | 2212.9 |
| 32.5° | 2207.3 | 2191.0 | 2147.0 | 2130.5 | 2119.4 |
| 35° | 2122.3 | 2094.9 | 2050.9 | 2034.3 | 2020.6 |
| 37.5° | 2026.2 | 2001.4 | 1957.4 | 1938.2 | 1924.5 |
| 40° | 1927.4 | 1905.3 | 1861.2 | 1836.8 | 1825.8 |
| 42.5° | 1831.2 | 1809.1 | 1765.4 | 1737.8 | 1721.5 |
| 45° | 1727.0 | 1707.8 | 1666.4 | 1636.4 | 1625.4 |
| 47.5° | 1625.4 | 1606.1 | 1562.1 | 1531.9 | 1515.6 |
| 50° | 1518.2 | 1504.5 | 1466.0 | 1427.6 | 1413.9 |
| 52.5° | 1413.9 | 1394.6 | 1359.1 | 1328.9 | 1309.6 |
| 55° | 1307.0 | 1290.4 | 1257.4 | 1224.6 | 1210.9 |
| 57.5° | 1199.8 | 1186.1 | 1150.3 | 1117.4 | 1106.3 |
| 60° | 1092.6 | 1081.8 | 1043.3 | 1013.1 | 1004.9 |
| 62.5° | 988.3 | 969.1 | 941.7 | 914.4 | 903.3 |
| 65° | 881.4 | 864.8 | 837.4 | 812.7 | 799.0 |
| 67.5° | 771.6 | 757.7 | 733.1 | 714.0 | 702.9 |
| 70° | 669.9 | 658.8 | 634.1 | 614.9 | 604.1 |
| 72.5° | 565.7 | 554.6 | 540.9 | 521.7 | 513.6 |
| 75° | 461.1 | 455.8 | 441.9 | 425.6 | 431.1 |
| 77.5° | 367.9 | 356.9 | 351.3 | 343.2 | 335.0 |
| 80° | 274.7 | 271.7 | 266.2 | 258.0 | 252.6 |
| 82.5° | 186.7 | 186.7 | 184.1 | 173.0 | 173.0 |
| 85° | 112.4 | 109.8 | 107.2 | 98.7 | 96.1 |
| 87.5° | 49.5 | 43.9 | 38.5 | 30.3 | 27.4 |
| 90° | 1.1 | 14.0 | 38.1 | 35.8 | 36.9 |
| 92.5° | 24.1 | 32.6 | 33.8 | 35.0 | 35.0 |
| 95° | 56.7 | 67.7 | 69.5 | 69.5 | 67.7 |
| 97.5° | 94.4 | 104.5 | 108.8 | 108.8 | 108.8 |
| 100° | 137.9 | 146.9 | 150.0 | 150.0 | 148.9 |
| 102.5° | 183.8 | 190.5 | 194.7 | 195.9 | 194.7 |
| 105° | 234.0 | 237.1 | 239.5 | 241.3 | 241.3 |
| 107.5° | 283.7 | 288.4 | 288.4 | 289.2 | 283.7 |
| 110° | 331.9 | 338.2 | 338.2 | 338.2 | 335.0 |



TEST NUMBER: P916968

CATALOG NUMBER: DFN2DIP-PN4F0-090D050US930-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 384.0 | 390.6 | 389.5 | 386.4 | 384.0 |
| 115° | 435.3 | 441.6 | 439.6 | 438.5 | 435.3 |
| 117.5° | 486.2 | 494.8 | 489.3 | 486.2 | 483.1 |
| 120° | 537.5 | 546.1 | 537.5 | 537.5 | 534.0 |
| 122.5° | 584.2 | 595.1 | 589.6 | 586.5 | 584.2 |
| 125° | 633.2 | 642.9 | 639.8 | 636.3 | 635.1 |
| 127.5° | 680.9 | 693.0 | 688.8 | 684.0 | 680.9 |
| 130° | 725.7 | 739.6 | 737.7 | 735.4 | 731.1 |
| 132.5° | 775.8 | 786.7 | 787.5 | 782.0 | 778.9 |
| 135° | 819.0 | 831.0 | 833.3 | 832.2 | 829.1 |
| 137.5° | 867.2 | 876.9 | 878.8 | 878.0 | 873.3 |
| 140° | 909.5 | 919.2 | 924.6 | 924.6 | 920.4 |
| 142.5° | 953.0 | 962.8 | 965.9 | 967.0 | 962.8 |
| 145° | 994.3 | 1002.0 | 1008.2 | 1009.4 | 1005.1 |
| 147.5° | 1031.2 | 1040.9 | 1045.5 | 1047.5 | 1043.2 |
| 150° | 1069.3 | 1075.9 | 1080.1 | 1083.6 | 1080.1 |
| 152.5° | 1103.1 | 1109.7 | 1115.1 | 1119.4 | 1115.1 |
| 155° | 1136.9 | 1140.0 | 1143.5 | 1148.9 | 1145.4 |
| 157.5° | 1166.0 | 1168.3 | 1170.3 | 1178.1 | 1172.6 |
| 160° | 1192.0 | 1194.4 | 1195.6 | 1202.2 | 1197.5 |
| 162.5° | 1216.2 | 1216.2 | 1217.3 | 1224.7 | 1219.3 |
| 165° | 1236.8 | 1235.6 | 1235.6 | 1243.4 | 1237.9 |
| 167.5° | 1255.4 | 1251.9 | 1251.9 | 1259.7 | 1254.3 |
| 170° | 1269.4 | 1266.3 | 1265.2 | 1272.9 | 1266.3 |
| 172.5° | 1279.1 | 1276.0 | 1274.9 | 1282.6 | 1276.0 |
| 175° | 1286.9 | 1283.8 | 1281.5 | 1289.2 | 1282.6 |
| 177.5° | 1291.2 | 1288.1 | 1285.7 | 1292.3 | 1285.7 |
| 180° | 1289.2 | 1289.2 | 1289.2 | 1289.2 | 1289.2 |



TEST NUMBER: P916968
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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 | 11.26 | 12.29 | 12.05 | 13.11 | 14.12 | 10.82 | 11.85 | 11.61 | 12.67 | 13.68 |
| | 3H | 12.93 | 13.86 | 13.74 | 14.69 | 15.73 | 12.45 | 13.38 | 13.26 | 14.21 | 15.25 |
| | 4H | 13.53 | 14.41 | 14.36 | 15.25 | 16.29 | 13.04 | 13.92 | 13.87 | 14.76 | 15.81 |
| | 6H | 13.94 | 14.75 | 14.78 | 15.60 | 16.66 | 13.45 | 14.26 | 14.29 | 15.10 | 16.17 |
| | 8H | 14.05 | 14.82 | 14.90 | 15.69 | 16.75 | 13.56 | 14.33 | 14.41 | 15.20 | 16.26 |
| | 12H | 14.11 | 14.84 | 14.96 | 15.70 | 16.79 | 13.61 | 14.34 | 14.46 | 15.20 | 16.29 |
| 4H | 2H | 11.74 | 12.62 | 12.57 | 13.45 | 14.50 | 11.39 | 12.27 | 12.22 | 13.10 | 14.15 |
| | 3H | 13.62 | 14.36 | 14.47 | 15.23 | 16.29 | 13.22 | 13.95 | 14.06 | 14.82 | 15.89 |
| | 4H | 14.35 | 15.01 | 15.20 | 15.88 | 16.97 | 13.93 | 14.60 | 14.79 | 15.47 | 16.56 |
| | 6H | 14.87 | 15.45 | 15.75 | 16.34 | 17.44 | 14.45 | 15.03 | 15.32 | 15.92 | 17.02 |
| | 8H | 15.03 | 15.57 | 15.90 | 16.46 | 17.56 | 14.60 | 15.14 | 15.48 | 16.03 | 17.14 |
| | 12H | 15.11 | 15.60 | 16.01 | 16.51 | 17.62 | 14.67 | 15.16 | 15.57 | 16.07 | 17.18 |
| 8H | 4H | 14.56 | 15.10 | 15.43 | 15.98 | 17.09 | 14.19 | 14.73 | 15.06 | 15.61 | 16.72 |
| | 6H | 15.20 | 15.65 | 16.10 | 16.58 | 17.68 | 14.82 | 15.27 | 15.73 | 16.20 | 17.31 |
| | 8H | 15.42 | 15.82 | 16.34 | 16.74 | 17.87 | 15.04 | 15.44 | 15.95 | 16.36 | 17.48 |
| | 12H | 15.56 | 15.91 | 16.48 | 16.83 | 18.01 | 15.16 | 15.51 | 16.08 | 16.43 | 17.60 |
| 12H | 4H | 14.55 | 15.04 | 15.45 | 15.95 | 17.06 | 14.19 | 14.68 | 15.08 | 15.58 | 16.70 |
| | 6H | 15.23 | 15.63 | 16.14 | 16.55 | 17.67 | 14.87 | 15.26 | 15.78 | 16.19 | 17.31 |
| | 8H | 15.48 | 15.83 | 16.40 | 16.75 | 17.92 | 15.11 | 15.46 | 16.03 | 16.37 | 17.55 |