

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: P914863

Luminaire Tested: DFN2DIP-SQ4F0-060D090US927-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P914863
REPORT IS A COMBINATION OF REPORTS P901634 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-060D090US927-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

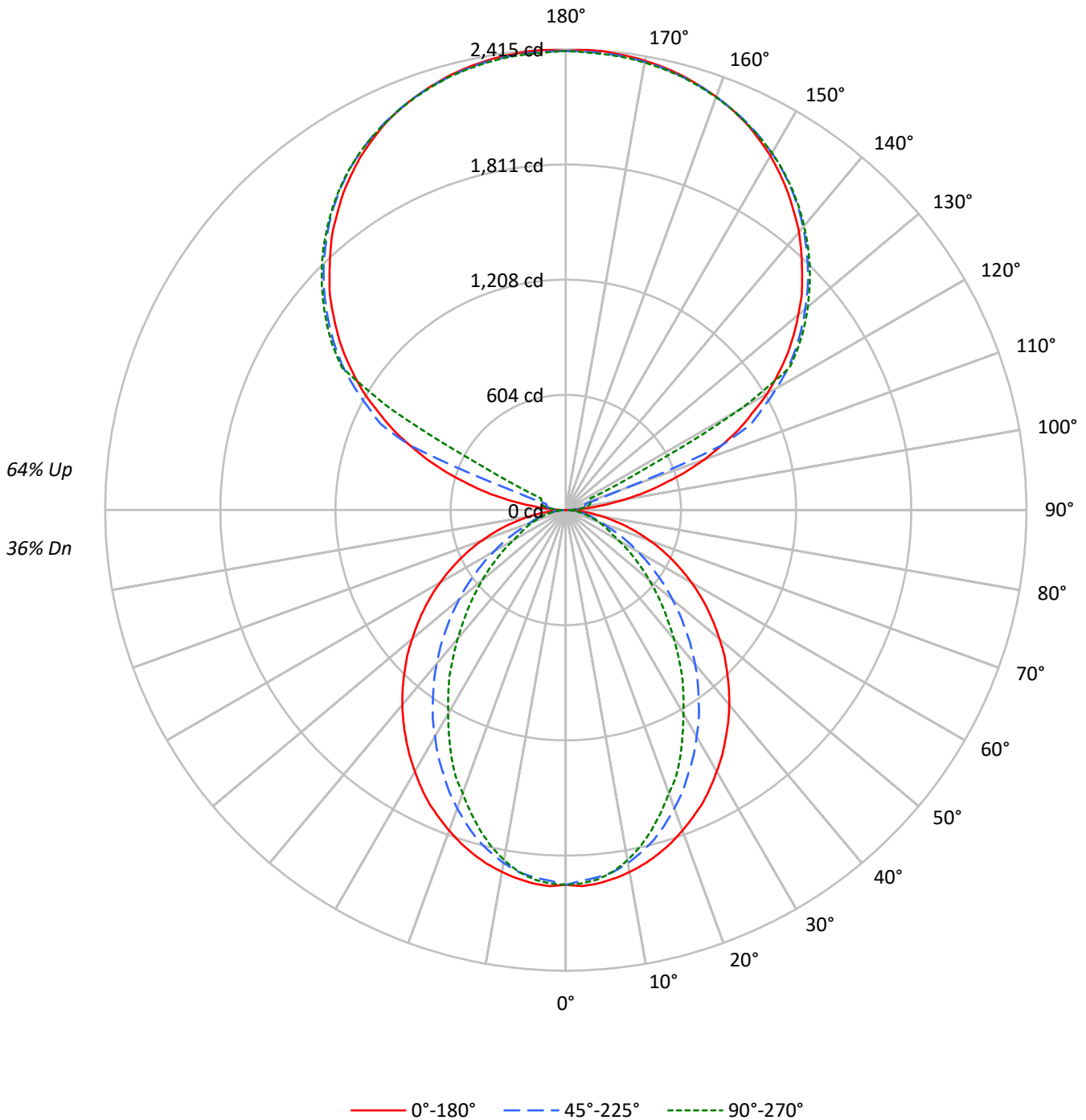
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 11098.4 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: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 116.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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: P914863

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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 | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 44 | 44 | 44 | 36 | | | | 36 |
| 1 | 95 | 91 | 87 | 84 | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 52 | 51 | 50 | 39 | 38 | 38 | 31 | | | | 31 |
| 2 | 87 | 80 | 74 | 69 | 78 | 73 | 68 | 63 | 59 | 56 | 53 | 46 | 44 | 42 | 35 | 33 | 32 | 27 | | | | 27 |
| 3 | 79 | 70 | 63 | 58 | 72 | 64 | 58 | 53 | 52 | 48 | 45 | 41 | 38 | 36 | 31 | 29 | 28 | 23 | | | | 23 |
| 4 | 73 | 63 | 55 | 49 | 66 | 57 | 51 | 46 | 47 | 42 | 38 | 37 | 34 | 31 | 28 | 26 | 24 | 20 | | | | 20 |
| 5 | 67 | 56 | 48 | 42 | 60 | 51 | 44 | 39 | 42 | 37 | 33 | 33 | 30 | 27 | 25 | 23 | 21 | 18 | | | | 18 |
| 6 | 62 | 50 | 42 | 37 | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 30 | 27 | 24 | 23 | 21 | 19 | 16 | | | | 16 |
| 7 | 57 | 45 | 38 | 32 | 52 | 41 | 35 | 30 | 34 | 29 | 26 | 28 | 24 | 21 | 21 | 19 | 17 | 14 | | | | 14 |
| 8 | 53 | 41 | 34 | 29 | 48 | 38 | 31 | 27 | 31 | 26 | 23 | 25 | 22 | 19 | 20 | 17 | 15 | 13 | | | | 13 |
| 9 | 49 | 37 | 30 | 25 | 45 | 34 | 28 | 24 | 29 | 24 | 20 | 23 | 20 | 17 | 18 | 16 | 14 | 12 | | | | 12 |
| 10 | 46 | 34 | 27 | 23 | 42 | 32 | 25 | 21 | 26 | 22 | 18 | 22 | 18 | 15 | 17 | 14 | 13 | 11 | | | | 11 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 1378 | 1378 | 1378 |
| 5° | 1381 | 1357 | 1366 |
| 10° | 1367 | 1330 | 1322 |
| 15° | 1348 | 1287 | 1253 |
| 20° | 1323 | 1226 | 1169 |
| 25° | 1298 | 1159 | 1088 |
| 30° | 1263 | 1089 | 985 |
| 35° | 1230 | 1015 | 895 |
| 40° | 1196 | 937 | 791 |
| 45° | 1156 | 851 | 697 |
| 50° | 1115 | 765 | 605 |
| 55° | 1072 | 672 | 516 |
| 60° | 1023 | 575 | 425 |
| 65° | 966 | 477 | 383 |
| 70° | 896 | 385 | 348 |
| 75° | 810 | 340 | 317 |
| 80° | 684 | 286 | 276 |
| 85° | 476 | 192 | 210 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1289 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 184.1 | 1.7 |
| 10°-20° | 505.4 | 4.6 |
| 20°-30° | 709.6 | 6.4 |
| 30°-40° | 773.5 | 7.0 |
| 40°-50° | 710.9 | 6.4 |
| 50°-60° | 558.3 | 5.0 |
| 60°-70° | 363.4 | 3.3 |
| 70°-80° | 187.1 | 1.7 |
| 80°-90° | 52.0 | 0.5 |
| 90°-100° | 79.3 | 0.7 |
| 100°-110° | 295.8 | 2.7 |
| 110°-120° | 784.4 | 7.1 |
| 120°-130° | 1301.0 | 11.7 |
| 130°-140° | 1382.0 | 12.5 |
| 140°-150° | 1284.4 | 11.6 |
| 150°-160° | 1032.6 | 9.3 |
| 160°-170° | 665.4 | 6.0 |
| 170°-180° | 229.0 | 2.1 |
| 0°-30° | 1399.1 | 12.6 |
| 0°-40° | 2172.6 | 19.6 |
| 0°-60° | 3441.9 | 31.0 |
| 0°-90° | 4044.4 | 36.4 |
| 90°-120° | 1159.5 | 10.4 |
| 90°-150° | 5127.0 | 46.2 |
| 90°-180° | 7054.0 | 63.6 |
| 0°-180° | 11098.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1964 | 1964 | 1964 | 1964 | 1964 | |
| 5° | 1964 | 1956 | 1932 | 1948 | 1943 | 186 |
| 15° | 1868 | 1849 | 1788 | 1755 | 1737 | 527 |
| 25° | 1696 | 1639 | 1522 | 1449 | 1422 | 780 |
| 35° | 1461 | 1371 | 1214 | 1102 | 1063 | 915 |
| 45° | 1195 | 1076 | 889 | 763 | 720 | 923 |
| 55° | 908 | 770 | 578 | 471 | 437 | 812 |
| 65° | 613 | 469 | 309 | 249 | 244 | 608 |
| 75° | 327 | 203 | 142 | 130 | 128 | 346 |
| 85° | 76 | 39 | 34 | 34 | 34 | 88 |
| 90° | 2 | 21 | 35 | 44 | 47 | 10 |
| 95° | 113 | 56 | 68 | 77 | 75 | 134 |
| 105° | 529 | 582 | 106 | 125 | 132 | 566 |
| 115° | 1001 | 1031 | 1074 | 268 | 143 | 986 |
| 125° | 1415 | 1438 | 1471 | 1483 | 1489 | 1262 |
| 135° | 1752 | 1780 | 1795 | 1813 | 1809 | 1353 |
| 145° | 2032 | 2030 | 2060 | 2072 | 2063 | 1271 |
| 155° | 2237 | 2222 | 2243 | 2253 | 2239 | 1031 |
| 165° | 2357 | 2347 | 2352 | 2364 | 2352 | 666 |
| 175° | 2411 | 2399 | 2403 | 2415 | 2398 | 229 |
| 180° | 2406 | 2406 | 2406 | 2406 | 2406 | |



TEST NUMBER: P914863

CATALOG NUMBER: DFN2DIP-SQ4F0-060D090US927-RLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1964.5 | 1964.5 | 1964.5 | 1964.5 | 1964.5 |
| 2.5° | 1973.3 | 1964.5 | 1944.8 | 1962.7 | 1959.1 |
| 5° | 1964.5 | 1955.6 | 1932.4 | 1948.4 | 1943.1 |
| 7.5° | 1948.4 | 1937.8 | 1913.0 | 1919.9 | 1911.1 |
| 10° | 1927.1 | 1914.6 | 1879.2 | 1873.7 | 1863.1 |
| 12.5° | 1900.5 | 1884.4 | 1836.4 | 1825.8 | 1806.2 |
| 15° | 1868.4 | 1848.8 | 1788.4 | 1754.7 | 1736.9 |
| 17.5° | 1831.1 | 1802.6 | 1727.9 | 1688.9 | 1660.4 |
| 20° | 1788.4 | 1752.8 | 1664.0 | 1619.6 | 1580.4 |
| 22.5° | 1742.2 | 1701.3 | 1598.1 | 1537.8 | 1511.2 |
| 25° | 1696.1 | 1639.1 | 1521.8 | 1449.0 | 1422.2 |
| 27.5° | 1641.0 | 1580.4 | 1450.6 | 1367.1 | 1326.2 |
| 30° | 1582.3 | 1514.6 | 1372.4 | 1281.8 | 1233.7 |
| 32.5° | 1525.3 | 1443.5 | 1297.9 | 1191.1 | 1146.6 |
| 35° | 1461.4 | 1370.7 | 1214.3 | 1102.2 | 1063.0 |
| 37.5° | 1399.2 | 1301.2 | 1136.1 | 1013.3 | 968.9 |
| 40° | 1333.3 | 1226.8 | 1054.2 | 928.0 | 881.8 |
| 42.5° | 1265.8 | 1152.1 | 972.5 | 840.8 | 796.5 |
| 45° | 1194.7 | 1075.5 | 889.0 | 762.6 | 719.9 |
| 47.5° | 1127.2 | 1001.0 | 809.0 | 682.6 | 643.6 |
| 50° | 1052.5 | 926.3 | 730.7 | 607.9 | 570.8 |
| 52.5° | 979.5 | 846.1 | 656.0 | 538.7 | 504.9 |
| 55° | 908.4 | 769.8 | 577.7 | 471.2 | 437.4 |
| 57.5° | 835.6 | 693.3 | 508.5 | 408.9 | 380.4 |
| 60° | 760.9 | 618.7 | 435.5 | 345.0 | 316.5 |
| 62.5° | 688.1 | 545.9 | 373.3 | 288.0 | 273.9 |
| 65° | 613.4 | 469.3 | 309.3 | 249.0 | 243.5 |
| 67.5° | 542.2 | 398.2 | 249.0 | 218.6 | 213.3 |
| 70° | 467.5 | 328.9 | 206.1 | 188.5 | 181.3 |
| 72.5° | 396.5 | 264.8 | 172.4 | 158.3 | 154.6 |
| 75° | 327.1 | 202.6 | 142.2 | 129.8 | 128.1 |
| 77.5° | 257.9 | 143.9 | 112.0 | 104.9 | 101.3 |
| 80° | 193.7 | 103.1 | 85.2 | 78.3 | 78.3 |
| 82.5° | 135.1 | 69.4 | 58.6 | 55.1 | 55.1 |
| 85° | 76.4 | 39.1 | 33.7 | 33.7 | 33.7 |
| 87.5° | 28.5 | 14.2 | 14.2 | 12.4 | 12.4 |
| 90° | 1.7 | 20.9 | 34.7 | 43.6 | 46.9 |
| 92.5° | 43.6 | 36.6 | 41.7 | 45.3 | 46.9 |
| 95° | 113.1 | 55.6 | 67.8 | 76.7 | 74.9 |
| 97.5° | 203.7 | 61.0 | 88.7 | 94.0 | 95.7 |
| 100° | 308.2 | 69.7 | 99.3 | 113.1 | 116.6 |
| 102.5° | 423.0 | 419.7 | 102.7 | 121.8 | 127.1 |
| 105° | 529.3 | 581.6 | 106.2 | 125.3 | 132.3 |
| 107.5° | 652.9 | 696.3 | 109.8 | 128.8 | 135.9 |
| 110° | 771.3 | 807.8 | 304.8 | 130.6 | 137.5 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 882.8 | 914.0 | 884.5 | 134.0 | 139.3 |
| 115° | 1001.1 | 1030.6 | 1074.3 | 268.2 | 142.8 |
| 117.5° | 1103.8 | 1138.6 | 1168.3 | 919.2 | 463.1 |
| 120° | 1218.8 | 1244.8 | 1276.3 | 1297.1 | 1062.1 |
| 122.5° | 1316.2 | 1344.1 | 1379.0 | 1389.3 | 1391.2 |
| 125° | 1415.4 | 1438.1 | 1471.2 | 1483.4 | 1488.6 |
| 127.5° | 1505.9 | 1530.3 | 1556.6 | 1574.0 | 1575.6 |
| 130° | 1591.3 | 1619.3 | 1638.3 | 1657.5 | 1655.9 |
| 132.5° | 1678.4 | 1701.1 | 1720.1 | 1735.9 | 1734.2 |
| 135° | 1751.6 | 1779.5 | 1795.0 | 1812.6 | 1809.1 |
| 137.5° | 1828.1 | 1849.0 | 1866.5 | 1883.9 | 1878.7 |
| 140° | 1902.9 | 1917.0 | 1936.0 | 1951.7 | 1943.1 |
| 142.5° | 1965.8 | 1978.0 | 2000.5 | 2014.4 | 2005.7 |
| 145° | 2031.9 | 2030.0 | 2059.7 | 2071.9 | 2063.2 |
| 147.5° | 2089.2 | 2084.1 | 2113.6 | 2122.3 | 2115.4 |
| 150° | 2145.1 | 2132.9 | 2160.8 | 2171.1 | 2162.4 |
| 152.5° | 2192.0 | 2178.1 | 2204.2 | 2214.7 | 2202.5 |
| 155° | 2237.3 | 2221.8 | 2242.6 | 2253.0 | 2239.1 |
| 157.5° | 2273.9 | 2260.0 | 2275.7 | 2287.9 | 2273.9 |
| 160° | 2305.2 | 2294.7 | 2305.2 | 2315.6 | 2303.4 |
| 162.5° | 2333.0 | 2322.6 | 2331.3 | 2343.5 | 2327.8 |
| 165° | 2357.4 | 2347.0 | 2352.2 | 2364.4 | 2352.2 |
| 167.5° | 2376.6 | 2366.1 | 2371.4 | 2383.6 | 2367.9 |
| 170° | 2392.3 | 2381.8 | 2385.3 | 2397.5 | 2381.8 |
| 172.5° | 2402.7 | 2392.3 | 2395.8 | 2408.0 | 2392.3 |
| 175° | 2411.3 | 2399.1 | 2402.7 | 2414.8 | 2397.5 |
| 177.5° | 2414.8 | 2402.7 | 2404.5 | 2416.7 | 2401.0 |
| 180° | 2406.2 | 2406.2 | 2406.2 | 2406.2 | 2406.2 |



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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 | 6.86 | 7.59 | 7.93 | 8.66 | 10.11 | 2.82 | 3.55 | 3.89 | 4.62 | 6.07 |
| | 3H | 8.53 | 9.19 | 9.61 | 10.26 | 11.74 | 4.00 | 4.65 | 5.08 | 5.73 | 7.21 |
| | 4H | 9.14 | 9.76 | 10.23 | 10.84 | 12.32 | 4.45 | 5.07 | 5.54 | 6.15 | 7.63 |
| | 6H | 9.56 | 10.13 | 10.66 | 11.21 | 12.70 | 4.76 | 5.33 | 5.86 | 6.42 | 7.91 |
| | 8H | 9.69 | 10.23 | 10.79 | 11.33 | 12.81 | 4.85 | 5.39 | 5.96 | 6.49 | 7.98 |
| | 12H | 9.75 | 10.26 | 10.86 | 11.35 | 12.86 | 4.89 | 5.41 | 6.00 | 6.50 | 8.01 |
| 4H | 2H | 6.87 | 7.48 | 7.96 | 8.56 | 10.04 | 3.41 | 4.02 | 4.50 | 5.10 | 6.58 |
| | 3H | 8.69 | 9.20 | 9.79 | 10.31 | 11.80 | 4.75 | 5.26 | 5.85 | 6.37 | 7.86 |
| | 4H | 9.38 | 9.85 | 10.49 | 10.95 | 12.46 | 5.29 | 5.77 | 6.40 | 6.86 | 8.37 |
| | 6H | 9.90 | 10.30 | 11.01 | 11.42 | 12.92 | 5.71 | 6.11 | 6.82 | 7.23 | 8.74 |
| | 8H | 10.07 | 10.45 | 11.19 | 11.56 | 13.08 | 5.84 | 6.21 | 6.95 | 7.32 | 8.85 |
| | 12H | 10.16 | 10.51 | 11.30 | 11.63 | 13.16 | 5.90 | 6.24 | 7.03 | 7.36 | 8.89 |
| 8H | 4H | 9.34 | 9.72 | 10.46 | 10.83 | 12.35 | 5.57 | 5.95 | 6.68 | 7.06 | 8.58 |
| | 6H | 9.91 | 10.22 | 11.05 | 11.37 | 12.89 | 6.08 | 6.40 | 7.22 | 7.55 | 9.07 |
| | 8H | 10.13 | 10.40 | 11.27 | 11.53 | 13.07 | 6.28 | 6.55 | 7.42 | 7.68 | 9.22 |
| | 12H | 10.27 | 10.51 | 11.41 | 11.64 | 13.21 | 6.39 | 6.63 | 7.54 | 7.76 | 9.34 |
| 12H | 4H | 9.29 | 9.63 | 10.42 | 10.76 | 12.28 | 5.57 | 5.91 | 6.70 | 7.03 | 8.56 |
| | 6H | 9.88 | 10.16 | 11.03 | 11.29 | 12.83 | 6.13 | 6.41 | 7.28 | 7.54 | 9.08 |
| | 8H | 10.10 | 10.34 | 11.25 | 11.47 | 13.05 | 6.34 | 6.58 | 7.49 | 7.71 | 9.29 |