

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: P922610

Luminaire Tested: DFN2DIP-SQ2F0-040D080US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P922610
REPORT IS A COMBINATION OF REPORTS P899834 AND P896659
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ2F0-040D080US940-RLLFLL
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

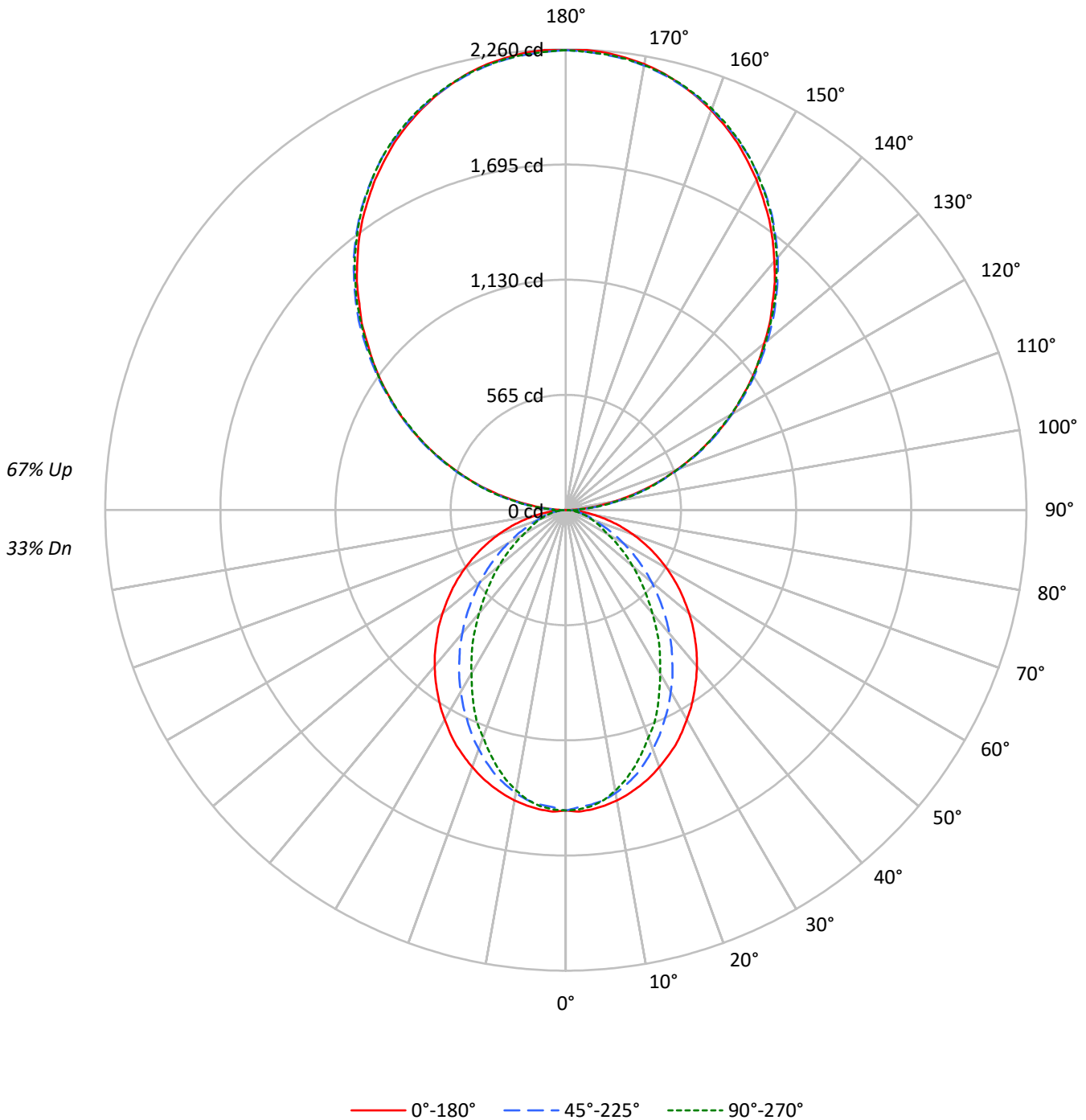
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9345.1 lumens
Efficiency: N/A
Efficacy: 94.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 98.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9952
Total Harmonic Distortion (THDi): 0.069
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: P922610
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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 | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 | 33 | | | | 33 |
| 1 | 94 | 90 | 86 | 83 | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 | 28 | | | | 28 |
| 2 | 86 | 79 | 73 | 68 | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 | 24 | | | | 24 |
| 3 | 79 | 70 | 63 | 57 | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 | 21 | | | | 21 |
| 4 | 72 | 62 | 54 | 49 | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 | 18 | | | | 18 |
| 5 | 66 | 55 | 47 | 42 | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 | 16 | | | | 16 |
| 6 | 61 | 49 | 42 | 36 | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 | 14 | | | | 14 |
| 7 | 56 | 45 | 37 | 32 | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 | 13 | | | | 13 |
| 8 | 52 | 40 | 33 | 28 | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 | 11 | | | | 11 |
| 9 | 49 | 37 | 30 | 25 | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 | 10 | | | | 10 |
| 10 | 45 | 34 | 27 | 22 | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 | 9 | | | | 9 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3242 | 3242 | 3242 |
| 5° | 3241 | 3183 | 3206 |
| 10° | 3204 | 3114 | 3097 |
| 15° | 3154 | 3004 | 2932 |
| 20° | 3090 | 2856 | 2730 |
| 25° | 3024 | 2690 | 2536 |
| 30° | 2938 | 2522 | 2291 |
| 35° | 2854 | 2341 | 2076 |
| 40° | 2767 | 2155 | 1830 |
| 45° | 2667 | 1950 | 1608 |
| 50° | 2564 | 1743 | 1390 |
| 55° | 2455 | 1523 | 1182 |
| 60° | 2329 | 1294 | 969 |
| 65° | 2183 | 1062 | 867 |
| 70° | 2007 | 846 | 778 |
| 75° | 1784 | 732 | 699 |
| 80° | 1465 | 594 | 593 |
| 85° | 953 | 369 | 421 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 3143 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 138.2 | 1.5 |
| 10°-20° | 379.3 | 4.1 |
| 20°-30° | 532.5 | 5.7 |
| 30°-40° | 580.5 | 6.2 |
| 40°-50° | 533.5 | 5.7 |
| 50°-60° | 419.0 | 4.5 |
| 60°-70° | 272.7 | 2.9 |
| 70°-80° | 140.4 | 1.5 |
| 80°-90° | 42.3 | 0.5 |
| 90°-100° | 139.6 | 1.5 |
| 100°-110° | 443.6 | 4.7 |
| 110°-120° | 759.1 | 8.1 |
| 120°-130° | 998.3 | 10.7 |
| 130°-140° | 1120.6 | 12.0 |
| 140°-150° | 1098.9 | 11.8 |
| 150°-160° | 921.8 | 9.9 |
| 160°-170° | 611.3 | 6.5 |
| 170°-180° | 213.7 | 2.3 |
| 0°-30° | 1049.9 | 11.2 |
| 0°-40° | 1630.4 | 17.4 |
| 0°-60° | 2582.9 | 27.6 |
| 0°-90° | 3038.2 | 32.5 |
| 90°-120° | 1342.3 | 14.4 |
| 90°-150° | 4560.1 | 48.8 |
| 90°-180° | 6307.0 | 67.5 |
| 0°-180° | 9345.1 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 1474 | 1474 | 1474 | 1474 | 1474 | |
| 5° | 1474 | 1468 | 1450 | 1462 | 1458 | 140 |
| 15° | 1402 | 1387 | 1342 | 1317 | 1304 | 395 |
| 25° | 1273 | 1230 | 1142 | 1087 | 1067 | 585 |
| 35° | 1097 | 1029 | 911 | 827 | 798 | 686 |
| 45° | 896 | 807 | 667 | 572 | 540 | 692 |
| 55° | 682 | 578 | 434 | 354 | 328 | 609 |
| 65° | 460 | 352 | 232 | 187 | 183 | 456 |
| 75° | 245 | 152 | 107 | 97 | 96 | 260 |
| 85° | 57 | 29 | 25 | 25 | 25 | 66 |
| 90° | 2 | 24 | 67 | 63 | 65 | 9 |
| 95° | 99 | 118 | 122 | 122 | 118 | 111 |
| 105° | 410 | 415 | 419 | 422 | 422 | 432 |
| 115° | 762 | 773 | 769 | 767 | 762 | 753 |
| 125° | 1108 | 1125 | 1120 | 1113 | 1111 | 990 |
| 135° | 1433 | 1454 | 1458 | 1456 | 1451 | 1108 |
| 145° | 1740 | 1754 | 1764 | 1766 | 1759 | 1087 |
| 155° | 1990 | 1995 | 2001 | 2010 | 2004 | 916 |
| 165° | 2164 | 2162 | 2162 | 2176 | 2166 | 611 |
| 175° | 2252 | 2247 | 2242 | 2256 | 2244 | 214 |
| 180° | 2256 | 2256 | 2256 | 2256 | 2256 | |



TEST NUMBER: P922610

CATALOG NUMBER: DFN2DIP-SQ2F0-040D080US940-RLFL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 1474.2 | 1474.2 | 1474.2 | 1474.2 | 1474.2 |
| 2.5° | 1480.9 | 1474.2 | 1459.5 | 1472.9 | 1470.2 |
| 5° | 1474.2 | 1467.5 | 1450.1 | 1462.1 | 1458.2 |
| 7.5° | 1462.1 | 1454.2 | 1435.6 | 1440.7 | 1434.1 |
| 10° | 1446.2 | 1436.8 | 1410.2 | 1406.0 | 1398.2 |
| 12.5° | 1426.2 | 1414.2 | 1378.0 | 1370.1 | 1355.4 |
| 15° | 1402.1 | 1387.4 | 1342.1 | 1316.8 | 1303.5 |
| 17.5° | 1374.1 | 1352.7 | 1296.6 | 1267.4 | 1246.0 |
| 20° | 1342.1 | 1315.4 | 1248.7 | 1215.4 | 1186.0 |
| 22.5° | 1307.4 | 1276.8 | 1199.3 | 1154.0 | 1134.1 |
| 25° | 1272.7 | 1230.0 | 1141.9 | 1087.4 | 1067.2 |
| 27.5° | 1231.5 | 1186.0 | 1088.6 | 1025.9 | 995.1 |
| 30° | 1187.4 | 1136.6 | 1029.8 | 961.9 | 925.9 |
| 32.5° | 1144.7 | 1083.2 | 973.9 | 893.9 | 860.4 |
| 35° | 1096.7 | 1028.6 | 911.2 | 827.2 | 797.7 |
| 37.5° | 1050.0 | 976.5 | 852.5 | 760.4 | 727.1 |
| 40° | 1000.6 | 920.6 | 791.1 | 696.4 | 661.7 |
| 42.5° | 949.8 | 864.5 | 729.8 | 631.0 | 597.7 |
| 45° | 896.5 | 807.1 | 667.1 | 572.3 | 540.3 |
| 47.5° | 845.9 | 751.2 | 607.1 | 512.3 | 483.0 |
| 50° | 789.8 | 695.1 | 548.3 | 456.2 | 428.3 |
| 52.5° | 735.0 | 635.0 | 492.3 | 404.2 | 378.9 |
| 55° | 681.7 | 577.6 | 433.5 | 353.6 | 328.2 |
| 57.5° | 627.1 | 520.3 | 381.6 | 306.8 | 285.5 |
| 60° | 571.0 | 464.2 | 326.8 | 258.9 | 237.6 |
| 62.5° | 516.4 | 409.7 | 280.1 | 216.2 | 205.5 |
| 65° | 460.3 | 352.1 | 232.1 | 186.8 | 182.7 |
| 67.5° | 407.0 | 298.8 | 186.8 | 164.1 | 160.1 |
| 70° | 350.9 | 246.8 | 154.7 | 141.4 | 136.0 |
| 72.5° | 297.6 | 198.8 | 129.4 | 118.8 | 116.1 |
| 75° | 245.4 | 152.0 | 106.7 | 97.4 | 96.1 |
| 77.5° | 193.5 | 108.0 | 84.1 | 78.7 | 76.0 |
| 80° | 145.3 | 77.4 | 63.9 | 58.8 | 58.8 |
| 82.5° | 101.4 | 52.1 | 44.1 | 41.3 | 41.3 |
| 85° | 57.3 | 29.3 | 25.3 | 25.3 | 25.3 |
| 87.5° | 21.4 | 10.6 | 10.6 | 9.4 | 9.4 |
| 90° | 2.1 | 24.5 | 66.7 | 62.6 | 64.6 |
| 92.5° | 42.2 | 57.2 | 59.2 | 61.2 | 61.2 |
| 95° | 99.3 | 118.3 | 121.7 | 121.7 | 118.3 |
| 97.5° | 165.3 | 183.0 | 190.5 | 190.5 | 190.5 |
| 100° | 241.5 | 257.1 | 262.5 | 262.5 | 260.5 |
| 102.5° | 321.7 | 333.3 | 340.7 | 342.8 | 340.7 |
| 105° | 409.5 | 414.9 | 419.0 | 422.4 | 422.4 |
| 107.5° | 496.5 | 504.7 | 504.7 | 506.0 | 496.5 |
| 110° | 580.9 | 591.7 | 591.7 | 591.7 | 586.3 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 672.0 | 683.6 | 681.5 | 676.1 | 672.0 |
| 115° | 761.8 | 772.7 | 769.3 | 767.2 | 761.8 |
| 117.5° | 850.9 | 865.9 | 856.3 | 850.9 | 845.4 |
| 120° | 940.7 | 955.6 | 940.7 | 940.7 | 934.5 |
| 122.5° | 1022.3 | 1041.3 | 1031.8 | 1026.4 | 1022.3 |
| 125° | 1108.0 | 1125.0 | 1119.5 | 1113.4 | 1111.4 |
| 127.5° | 1191.7 | 1212.7 | 1205.2 | 1197.1 | 1191.7 |
| 130° | 1269.9 | 1294.3 | 1290.9 | 1286.9 | 1279.4 |
| 132.5° | 1357.6 | 1376.6 | 1378.0 | 1368.5 | 1363.1 |
| 135° | 1433.1 | 1454.2 | 1458.3 | 1456.3 | 1450.8 |
| 137.5° | 1517.4 | 1534.5 | 1537.8 | 1536.5 | 1528.3 |
| 140° | 1591.6 | 1608.6 | 1618.1 | 1618.1 | 1610.6 |
| 142.5° | 1667.8 | 1684.8 | 1690.2 | 1692.3 | 1684.8 |
| 145° | 1739.9 | 1753.5 | 1764.3 | 1766.4 | 1758.9 |
| 147.5° | 1804.5 | 1821.5 | 1829.6 | 1833.1 | 1825.6 |
| 150° | 1871.2 | 1882.7 | 1890.2 | 1896.3 | 1890.2 |
| 152.5° | 1930.3 | 1941.9 | 1951.4 | 1958.9 | 1951.4 |
| 155° | 1989.5 | 1994.9 | 2001.1 | 2010.5 | 2004.5 |
| 157.5° | 2040.5 | 2044.6 | 2048.0 | 2061.5 | 2052.1 |
| 160° | 2086.1 | 2090.2 | 2092.2 | 2103.7 | 2095.6 |
| 162.5° | 2128.2 | 2128.2 | 2130.3 | 2143.2 | 2133.7 |
| 165° | 2164.3 | 2162.2 | 2162.2 | 2175.9 | 2166.3 |
| 167.5° | 2196.9 | 2190.8 | 2190.8 | 2204.4 | 2194.9 |
| 170° | 2221.4 | 2216.0 | 2213.9 | 2227.6 | 2216.0 |
| 172.5° | 2238.5 | 2233.0 | 2231.0 | 2244.5 | 2233.0 |
| 175° | 2252.0 | 2246.6 | 2242.5 | 2256.1 | 2244.5 |
| 177.5° | 2259.5 | 2254.1 | 2250.0 | 2261.6 | 2250.0 |
| 180° | 2256.1 | 2256.1 | 2256.1 | 2256.1 | 2256.1 |



TEST NUMBER: P922610
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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 | 9.22 | 9.92 | 10.32 | 11.01 | 12.52 | 5.18 | 5.88 | 6.28 | 6.97 | 8.48 |
| | 3H | 10.87 | 11.50 | 11.97 | 12.60 | 14.12 | 6.34 | 6.97 | 7.45 | 8.07 | 9.59 |
| | 4H | 11.45 | 12.05 | 12.57 | 13.16 | 14.68 | 6.77 | 7.37 | 7.89 | 8.47 | 10.00 |
| | 6H | 11.85 | 12.40 | 12.98 | 13.51 | 15.05 | 7.07 | 7.62 | 8.19 | 8.72 | 10.26 |
| | 8H | 11.97 | 12.49 | 13.10 | 13.61 | 15.14 | 7.15 | 7.67 | 8.28 | 8.79 | 10.32 |
| | 12H | 12.02 | 12.51 | 13.15 | 13.63 | 15.18 | 7.18 | 7.67 | 8.31 | 8.79 | 10.34 |
| 4H | 2H | 9.21 | 9.81 | 10.34 | 10.92 | 12.44 | 5.75 | 6.34 | 6.87 | 7.45 | 8.97 |
| | 3H | 11.01 | 11.51 | 12.14 | 12.64 | 14.17 | 7.06 | 7.56 | 8.19 | 8.69 | 10.23 |
| | 4H | 11.68 | 12.14 | 12.82 | 13.26 | 14.82 | 7.59 | 8.05 | 8.73 | 9.17 | 10.73 |
| | 6H | 12.17 | 12.56 | 13.31 | 13.70 | 15.25 | 7.98 | 8.38 | 9.13 | 9.52 | 11.07 |
| | 8H | 12.33 | 12.70 | 13.47 | 13.83 | 15.40 | 8.10 | 8.47 | 9.24 | 9.60 | 11.16 |
| | 12H | 12.41 | 12.74 | 13.57 | 13.89 | 15.46 | 8.15 | 8.48 | 9.31 | 9.62 | 11.20 |
| 8H | 4H | 11.64 | 12.00 | 12.78 | 13.13 | 14.70 | 7.85 | 8.22 | 8.99 | 9.35 | 10.91 |
| | 6H | 12.18 | 12.48 | 13.34 | 13.65 | 15.21 | 8.34 | 8.64 | 9.50 | 9.82 | 11.38 |
| | 8H | 12.38 | 12.64 | 13.54 | 13.80 | 15.38 | 8.52 | 8.78 | 9.68 | 9.93 | 11.52 |
| | 12H | 12.50 | 12.73 | 13.67 | 13.88 | 15.50 | 8.62 | 8.85 | 9.78 | 10.00 | 11.62 |
| 12H | 4H | 11.58 | 11.91 | 12.74 | 13.06 | 14.63 | 7.85 | 8.18 | 9.00 | 9.32 | 10.89 |
| | 6H | 12.15 | 12.41 | 13.32 | 13.57 | 15.15 | 8.38 | 8.65 | 9.55 | 9.80 | 11.38 |
| | 8H | 12.35 | 12.58 | 13.52 | 13.73 | 15.35 | 8.57 | 8.80 | 9.74 | 9.96 | 11.57 |