

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: P906215

Luminaire Tested: DFN2DIP-SQ2F0-030D070US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906215  
REPORT IS A COMBINATION OF REPORTS P901340 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-030D070US835-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

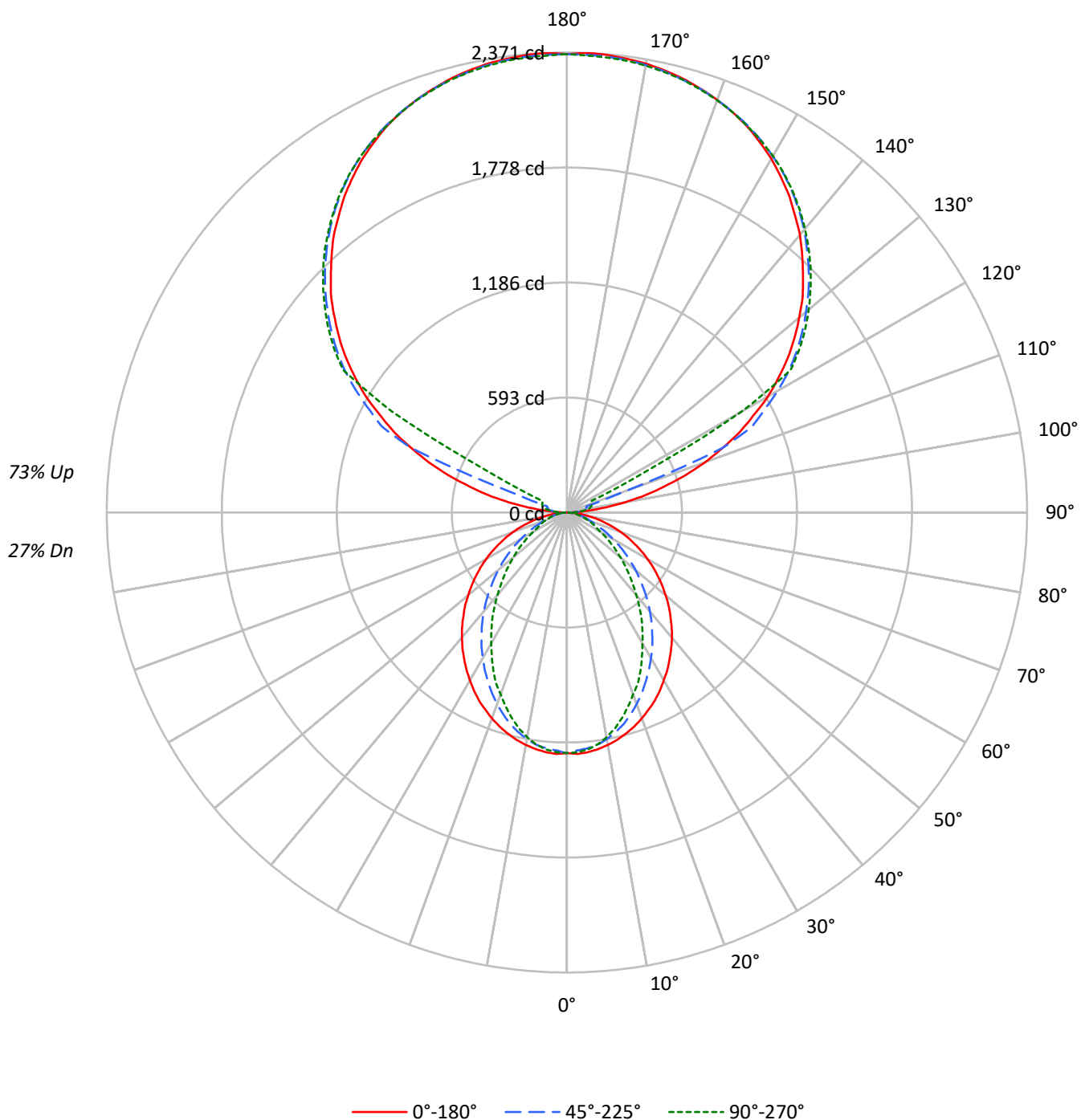
Lumens per Lamp: N/A  
Luminaire Lumens: 9480.0 lumens  
Efficiency: N/A  
Efficacy: 122.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 77.5  
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



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |  |    |    |    |    |  |    |    |    |  |    |    |    |  |    |    |    |
|-----|-----|-----|-----|-----|--|----|----|----|----|--|----|----|----|--|----|----|----|--|----|----|----|
| RF  | 20  |     |     |     |  | 20 |    |    |    |  | 20 |    |    |  |    | 20 |    |  |    |    | 20 |
| RC  | 80  |     |     |     |  | 70 |    |    |    |  | 50 |    |    |  |    | 30 |    |  |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  |  | 70 | 50 | 30 | 10 |  | 50 | 30 | 10 |  | 50 | 30 | 10 |  | 50 | 30 | 10 |
| RCR |     |     |     |     |  |    |    |    |    |  |    |    |    |  |    |    |    |  |    |    |    |
| 0   | 102 | 102 | 102 | 102 |  | 91 | 91 | 91 | 91 |  | 71 | 71 | 71 |  | 52 | 52 | 52 |  | 35 | 35 | 35 |
| 1   | 93  | 89  | 85  | 82  |  | 83 | 79 | 76 | 74 |  | 62 | 60 | 58 |  | 46 | 45 | 44 |  | 31 | 31 | 30 |
| 2   | 85  | 78  | 72  | 67  |  | 75 | 70 | 65 | 61 |  | 55 | 51 | 49 |  | 41 | 39 | 37 |  | 28 | 27 | 26 |
| 3   | 77  | 69  | 62  | 56  |  | 69 | 62 | 56 | 51 |  | 48 | 44 | 41 |  | 36 | 34 | 31 |  | 25 | 23 | 22 |
| 4   | 71  | 61  | 53  | 48  |  | 63 | 55 | 48 | 43 |  | 43 | 39 | 35 |  | 32 | 29 | 27 |  | 22 | 21 | 19 |
| 5   | 65  | 54  | 46  | 41  |  | 58 | 49 | 42 | 37 |  | 39 | 34 | 30 |  | 29 | 26 | 23 |  | 20 | 18 | 17 |
| 6   | 60  | 48  | 41  | 35  |  | 53 | 44 | 37 | 32 |  | 35 | 30 | 26 |  | 26 | 23 | 21 |  | 18 | 16 | 15 |
| 7   | 55  | 44  | 36  | 31  |  | 49 | 39 | 33 | 28 |  | 31 | 27 | 23 |  | 24 | 21 | 18 |  | 17 | 15 | 13 |
| 8   | 51  | 40  | 32  | 27  |  | 46 | 36 | 29 | 25 |  | 29 | 24 | 21 |  | 22 | 19 | 16 |  | 16 | 13 | 12 |
| 9   | 48  | 36  | 29  | 24  |  | 43 | 33 | 26 | 22 |  | 26 | 22 | 18 |  | 20 | 17 | 15 |  | 14 | 12 | 11 |
| 10  | 44  | 33  | 26  | 22  |  | 40 | 30 | 24 | 20 |  | 24 | 20 | 16 |  | 19 | 15 | 13 |  | 13 | 11 | 10 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2726 | 2726 | 2726 |
| 5°  | 2726 | 2677 | 2696 |
| 10° | 2694 | 2619 | 2605 |
| 15° | 2653 | 2526 | 2466 |
| 20° | 2599 | 2402 | 2296 |
| 25° | 2544 | 2263 | 2133 |
| 30° | 2471 | 2121 | 1927 |
| 35° | 2400 | 1969 | 1746 |
| 40° | 2327 | 1813 | 1539 |
| 45° | 2244 | 1640 | 1352 |
| 50° | 2156 | 1466 | 1169 |
| 55° | 2065 | 1281 | 994  |
| 60° | 1958 | 1088 | 815  |
| 65° | 1836 | 893  | 729  |
| 70° | 1688 | 711  | 654  |
| 75° | 1500 | 616  | 587  |
| 80° | 1233 | 500  | 498  |
| 85° | 802  | 311  | 354  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2244 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.2  | 1.2       |
| 10°-20°   | 319.0  | 3.4       |
| 20°-30°   | 447.9  | 4.7       |
| 30°-40°   | 488.2  | 5.1       |
| 40°-50°   | 448.7  | 4.7       |
| 50°-60°   | 352.4  | 3.7       |
| 60°-70°   | 229.4  | 2.4       |
| 70°-80°   | 118.1  | 1.2       |
| 80°-90°   | 34.3   | 0.4       |
| 90°-100°  | 77.9   | 0.8       |
| 100°-110° | 290.4  | 3.1       |
| 110°-120° | 770.2  | 8.1       |
| 120°-130° | 1277.4 | 13.5      |
| 130°-140° | 1356.9 | 14.3      |
| 140°-150° | 1261.1 | 13.3      |
| 150°-160° | 1013.9 | 10.7      |
| 160°-170° | 653.3  | 6.9       |
| 170°-180° | 224.9  | 2.4       |
| 0°-30°    | 883.1  | 9.3       |
| 0°-40°    | 1371.3 | 14.5      |
| 0°-60°    | 2172.4 | 22.9      |
| 0°-90°    | 2554.1 | 26.9      |
| 90°-120°  | 1138.5 | 12.0      |
| 90°-150°  | 5033.8 | 53.1      |
| 90°-180°  | 6926.0 | 73.1      |
| 0°-180°   | 9480.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1240 | 1240  | 1240 | 1240  | 1240 |      |
| 5°   | 1240 | 1234  | 1220 | 1230  | 1226 | 118  |
| 15°  | 1179 | 1167  | 1129 | 1108  | 1096 | 332  |
| 25°  | 1070 | 1034  | 960  | 914   | 898  | 492  |
| 35°  | 922  | 865   | 766  | 696   | 671  | 577  |
| 45°  | 754  | 679   | 561  | 481   | 454  | 582  |
| 55°  | 573  | 486   | 365  | 297   | 276  | 512  |
| 65°  | 387  | 296   | 195  | 157   | 154  | 384  |
| 75°  | 206  | 128   | 90   | 82    | 81   | 218  |
| 85°  | 48   | 25    | 21   | 21    | 21   | 55   |
| 90°  | 2    | 20    | 34   | 43    | 46   | 9    |
| 95°  | 111  | 55    | 67   | 75    | 74   | 131  |
| 105° | 520  | 571   | 104  | 123   | 130  | 555  |
| 115° | 983  | 1012  | 1055 | 263   | 140  | 968  |
| 125° | 1390 | 1412  | 1444 | 1456  | 1462 | 1239 |
| 135° | 1720 | 1747  | 1762 | 1780  | 1776 | 1328 |
| 145° | 1995 | 1993  | 2022 | 2034  | 2026 | 1248 |
| 155° | 2197 | 2181  | 2202 | 2212  | 2198 | 1012 |
| 165° | 2314 | 2304  | 2309 | 2321  | 2309 | 654  |
| 175° | 2368 | 2356  | 2359 | 2371  | 2354 | 225  |
| 180° | 2362 | 2362  | 2362 | 2362  | 2362 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1239.9 | 1239.9 | 1239.9 | 1239.9 | 1239.9 |
| 2.5°   | 1245.5 | 1239.9 | 1227.5 | 1238.8 | 1236.6 |
| 5°     | 1239.9 | 1234.3 | 1219.7 | 1229.8 | 1226.4 |
| 7.5°   | 1229.8 | 1223.1 | 1207.4 | 1211.8 | 1206.2 |
| 10°    | 1216.3 | 1208.5 | 1186.1 | 1182.6 | 1176.0 |
| 12.5°  | 1199.5 | 1189.4 | 1159.1 | 1152.4 | 1140.0 |
| 15°    | 1179.3 | 1166.9 | 1128.8 | 1107.5 | 1096.3 |
| 17.5°  | 1155.7 | 1137.8 | 1090.6 | 1066.0 | 1048.0 |
| 20°    | 1128.8 | 1106.3 | 1050.2 | 1022.3 | 997.5  |
| 22.5°  | 1099.7 | 1073.8 | 1008.7 | 970.6  | 953.8  |
| 25°    | 1070.5 | 1034.5 | 960.5  | 914.5  | 897.6  |
| 27.5°  | 1035.7 | 997.5  | 915.6  | 862.9  | 837.0  |
| 30°    | 998.7  | 956.0  | 866.2  | 809.1  | 778.7  |
| 32.5°  | 962.7  | 911.1  | 819.2  | 751.8  | 723.7  |
| 35°    | 922.4  | 865.1  | 766.4  | 695.7  | 671.0  |
| 37.5°  | 883.1  | 821.3  | 717.0  | 639.5  | 611.6  |
| 40°    | 841.6  | 774.3  | 665.4  | 585.7  | 556.6  |
| 42.5°  | 798.9  | 727.2  | 613.8  | 530.7  | 502.7  |
| 45°    | 754.1  | 678.8  | 561.1  | 481.3  | 454.4  |
| 47.5°  | 711.4  | 631.8  | 510.6  | 430.8  | 406.2  |
| 50°    | 664.3  | 584.6  | 461.2  | 383.7  | 360.2  |
| 52.5°  | 618.2  | 534.1  | 414.1  | 340.0  | 318.7  |
| 55°    | 573.3  | 485.8  | 364.6  | 297.4  | 276.1  |
| 57.5°  | 527.4  | 437.6  | 321.0  | 258.1  | 240.1  |
| 60°    | 480.2  | 390.5  | 274.9  | 217.7  | 199.8  |
| 62.5°  | 434.3  | 344.5  | 235.6  | 181.8  | 172.9  |
| 65°    | 387.1  | 296.2  | 195.2  | 157.1  | 153.7  |
| 67.5°  | 342.3  | 251.3  | 157.1  | 138.0  | 134.6  |
| 70°    | 295.1  | 207.6  | 130.1  | 118.9  | 114.4  |
| 72.5°  | 250.2  | 167.1  | 108.8  | 99.9   | 97.6   |
| 75°    | 206.4  | 127.9  | 89.8   | 81.9   | 80.8   |
| 77.5°  | 162.7  | 90.8   | 70.7   | 66.2   | 63.9   |
| 80°    | 122.3  | 65.1   | 53.8   | 49.4   | 49.4   |
| 82.5°  | 85.2   | 43.8   | 37.0   | 34.8   | 34.8   |
| 85°    | 48.2   | 24.6   | 21.3   | 21.3   | 21.3   |
| 87.5°  | 18.0   | 8.9    | 8.9    | 7.9    | 7.9    |
| 90°    | 1.6    | 20.5   | 34.1   | 42.8   | 46.1   |
| 92.5°  | 42.8   | 35.9   | 41.0   | 44.5   | 46.1   |
| 95°    | 111.0  | 54.6   | 66.6   | 75.3   | 73.5   |
| 97.5°  | 199.9  | 59.9   | 87.1   | 92.4   | 94.0   |
| 100°   | 302.7  | 68.4   | 97.4   | 111.0  | 114.5  |
| 102.5° | 415.3  | 412.1  | 100.9  | 119.6  | 124.8  |
| 105°   | 519.7  | 571.0  | 104.3  | 123.0  | 129.9  |
| 107.5° | 641.0  | 683.7  | 107.8  | 126.5  | 133.4  |
| 110°   | 757.4  | 793.1  | 299.2  | 128.3  | 135.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 866.8  | 897.4  | 868.4  | 131.5  | 136.8  |
| 115°   | 982.9  | 1011.9 | 1054.7 | 263.3  | 140.3  |
| 117.5° | 1083.8 | 1117.9 | 1147.1 | 902.5  | 454.7  |
| 120°   | 1196.6 | 1222.2 | 1253.1 | 1273.6 | 1042.8 |
| 122.5° | 1292.2 | 1319.6 | 1354.0 | 1364.1 | 1365.9 |
| 125°   | 1389.7 | 1412.0 | 1444.5 | 1456.5 | 1461.5 |
| 127.5° | 1478.6 | 1502.5 | 1528.3 | 1545.4 | 1547.0 |
| 130°   | 1562.4 | 1589.8 | 1608.5 | 1627.4 | 1625.8 |
| 132.5° | 1647.9 | 1670.2 | 1688.9 | 1704.3 | 1702.7 |
| 135°   | 1719.7 | 1747.1 | 1762.4 | 1779.6 | 1776.2 |
| 137.5° | 1794.8 | 1815.4 | 1832.6 | 1849.7 | 1844.6 |
| 140°   | 1868.3 | 1882.1 | 1900.8 | 1916.2 | 1907.7 |
| 142.5° | 1930.0 | 1942.0 | 1964.1 | 1977.7 | 1969.2 |
| 145°   | 1995.0 | 1993.2 | 2022.2 | 2034.2 | 2025.7 |
| 147.5° | 2051.2 | 2046.2 | 2075.2 | 2083.7 | 2077.0 |
| 150°   | 2106.0 | 2094.1 | 2121.5 | 2131.6 | 2123.1 |
| 152.5° | 2152.1 | 2138.5 | 2164.1 | 2174.4 | 2162.5 |
| 155°   | 2196.6 | 2181.3 | 2201.8 | 2212.0 | 2198.4 |
| 157.5° | 2232.5 | 2218.9 | 2234.3 | 2246.3 | 2232.5 |
| 160°   | 2263.4 | 2253.0 | 2263.4 | 2273.5 | 2261.5 |
| 162.5° | 2290.6 | 2280.4 | 2288.9 | 2300.9 | 2285.5 |
| 165°   | 2314.5 | 2304.4 | 2309.4 | 2321.4 | 2309.4 |
| 167.5° | 2333.4 | 2323.0 | 2328.3 | 2340.3 | 2324.9 |
| 170°   | 2348.8 | 2338.5 | 2341.9 | 2353.9 | 2338.5 |
| 172.5° | 2359.0 | 2348.8 | 2352.3 | 2364.2 | 2348.8 |
| 175°   | 2367.5 | 2355.5 | 2359.0 | 2370.9 | 2353.9 |
| 177.5° | 2370.9 | 2359.0 | 2360.8 | 2372.8 | 2357.3 |
| 180°   | 2362.4 | 2362.4 | 2362.4 | 2362.4 | 2362.4 |

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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 | 7.85             | 8.52  | 8.98  | 9.64  | 11.21 | 3.81           | 4.48 | 4.94 | 5.60 | 7.17  |
|                 | 3H   | 9.49             | 10.09 | 10.64 | 11.23 | 12.81 | 4.96           | 5.57 | 6.11 | 6.70 | 8.28  |
|                 | 4H   | 10.08            | 10.65 | 11.23 | 11.78 | 13.37 | 5.39           | 5.96 | 6.55 | 7.10 | 8.69  |
|                 | 6H   | 10.48            | 11.00 | 11.64 | 12.14 | 13.74 | 5.69           | 6.22 | 6.85 | 7.35 | 8.95  |
|                 | 8H   | 10.59            | 11.09 | 11.75 | 12.24 | 13.83 | 5.77           | 6.27 | 6.93 | 7.42 | 9.01  |
|                 | 12H  | 10.64            | 11.11 | 11.81 | 12.26 | 13.87 | 5.80           | 6.27 | 6.97 | 7.42 | 9.03  |
| 4H              | 2H   | 7.84             | 8.41  | 9.00  | 9.54  | 11.13 | 4.37           | 4.94 | 5.53 | 6.08 | 7.66  |
|                 | 3H   | 9.63             | 10.11 | 10.80 | 11.27 | 12.87 | 5.69           | 6.16 | 6.85 | 7.32 | 8.92  |
|                 | 4H   | 10.30            | 10.74 | 11.47 | 11.89 | 13.51 | 6.21           | 6.65 | 7.38 | 7.80 | 9.42  |
|                 | 6H   | 10.79            | 11.16 | 11.96 | 12.33 | 13.94 | 6.60           | 6.98 | 7.78 | 8.15 | 9.76  |
|                 | 8H   | 10.95            | 11.30 | 12.12 | 12.46 | 14.09 | 6.72           | 7.07 | 7.89 | 8.23 | 9.86  |
|                 | 12H  | 11.03            | 11.34 | 12.22 | 12.52 | 14.15 | 6.77           | 7.08 | 7.95 | 8.25 | 9.89  |
| 8H              | 4H   | 10.25            | 10.60 | 11.43 | 11.76 | 13.39 | 6.47           | 6.82 | 7.64 | 7.98 | 9.61  |
|                 | 6H   | 10.79            | 11.08 | 11.98 | 12.28 | 13.91 | 6.96           | 7.24 | 8.15 | 8.45 | 10.07 |
|                 | 8H   | 11.00            | 11.24 | 12.19 | 12.43 | 14.07 | 7.13           | 7.38 | 8.33 | 8.57 | 10.21 |
|                 | 12H  | 11.11            | 11.33 | 12.31 | 12.51 | 14.19 | 7.23           | 7.45 | 8.43 | 8.63 | 10.31 |
| 12H             | 4H   | 10.20            | 10.51 | 11.39 | 11.69 | 13.32 | 6.46           | 6.78 | 7.65 | 7.95 | 9.58  |
|                 | 6H   | 10.77            | 11.02 | 11.96 | 12.20 | 13.84 | 7.00           | 7.25 | 8.20 | 8.43 | 10.08 |
|                 | 8H   | 10.96            | 11.18 | 12.17 | 12.36 | 14.04 | 7.19           | 7.41 | 8.39 | 8.59 | 10.26 |