

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: P909836

Luminaire Tested: DFN2DIP-TR3F0-030D080US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909836  
REPORT IS A COMBINATION OF REPORTS P900341 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-030D080US840-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

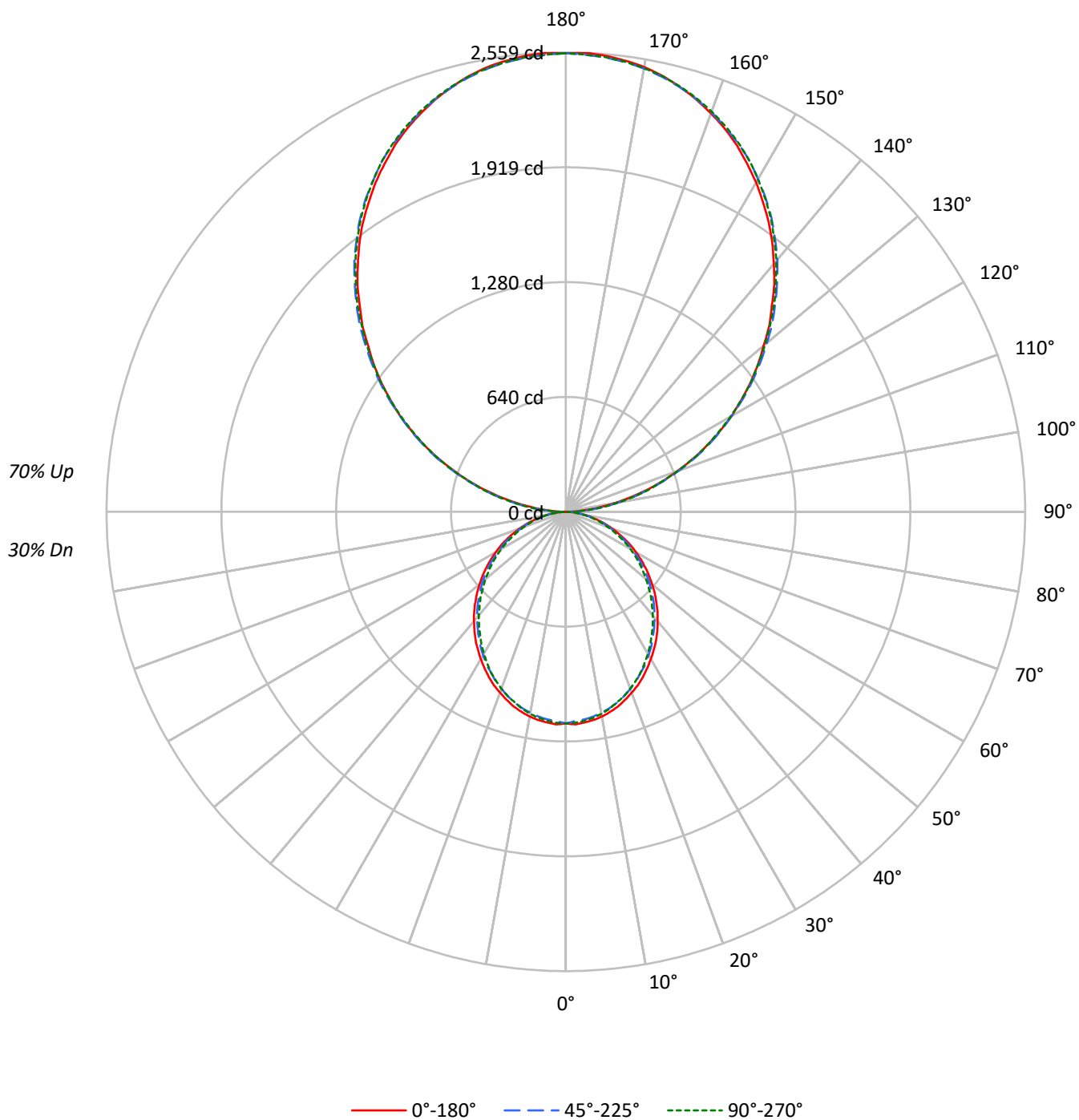
Lumens per Lamp: N/A  
Luminaire Lumens: 10149.2 lumens  
Efficiency: N/A  
Efficacy: 119.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 85.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P909836

CATALOG NUMBER: DFN2DIP-TR3F0-030D080US840-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P909836

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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 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 37 | 37 | 37 |
| 1   | 93  | 89  | 85  | 82  | 83 | 80 | 77 | 74 | 63 | 61 | 59 | 47 | 46 | 45 | 33 | 32 | 32 |
| 2   | 85  | 78  | 72  | 67  | 76 | 70 | 65 | 61 | 55 | 52 | 49 | 42 | 39 | 37 | 29 | 28 | 27 |
| 3   | 77  | 68  | 61  | 56  | 69 | 61 | 55 | 51 | 49 | 44 | 41 | 37 | 34 | 32 | 26 | 24 | 23 |
| 4   | 71  | 60  | 53  | 47  | 63 | 54 | 48 | 43 | 43 | 38 | 35 | 33 | 30 | 27 | 23 | 21 | 19 |
| 5   | 65  | 54  | 46  | 40  | 58 | 48 | 42 | 37 | 38 | 34 | 30 | 29 | 26 | 23 | 21 | 19 | 17 |
| 6   | 60  | 48  | 40  | 34  | 53 | 43 | 37 | 32 | 35 | 30 | 26 | 26 | 23 | 20 | 19 | 17 | 15 |
| 7   | 55  | 43  | 35  | 30  | 49 | 39 | 32 | 28 | 31 | 26 | 23 | 24 | 20 | 18 | 17 | 15 | 13 |
| 8   | 51  | 39  | 32  | 26  | 46 | 35 | 29 | 24 | 28 | 24 | 20 | 22 | 18 | 16 | 16 | 13 | 12 |
| 9   | 47  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 26 | 21 | 18 | 20 | 17 | 14 | 14 | 12 | 11 |
| 10  | 44  | 32  | 25  | 21  | 40 | 29 | 23 | 19 | 24 | 19 | 16 | 18 | 15 | 13 | 13 | 11 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1469 | 1469 | 1469 |
| 5°  | 1470 | 1447 | 1457 |
| 10° | 1458 | 1427 | 1437 |
| 15° | 1436 | 1402 | 1405 |
| 20° | 1406 | 1368 | 1372 |
| 25° | 1376 | 1328 | 1335 |
| 30° | 1339 | 1290 | 1287 |
| 35° | 1304 | 1246 | 1237 |
| 40° | 1261 | 1201 | 1190 |
| 45° | 1218 | 1157 | 1141 |
| 50° | 1171 | 1110 | 1084 |
| 55° | 1122 | 1055 | 1032 |
| 60° | 1066 | 991  | 973  |
| 65° | 1005 | 924  | 902  |
| 70° | 927  | 843  | 826  |
| 75° | 820  | 745  | 754  |
| 80° | 690  | 619  | 620  |
| 85° | 488  | 407  | 400  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2495 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 111.0   | 1.1       |
| 10°-20°   | 312.2   | 3.1       |
| 20°-30°   | 458.8   | 4.5       |
| 30°-40°   | 532.8   | 5.3       |
| 40°-50°   | 532.2   | 5.2       |
| 50°-60°   | 464.1   | 4.6       |
| 60°-70°   | 343.1   | 3.4       |
| 70°-80°   | 194.1   | 1.9       |
| 80°-90°   | 58.5    | 0.6       |
| 90°-100°  | 158.1   | 1.6       |
| 100°-110° | 502.4   | 4.9       |
| 110°-120° | 859.7   | 8.5       |
| 120°-130° | 1130.6  | 11.1      |
| 130°-140° | 1269.1  | 12.5      |
| 140°-150° | 1244.5  | 12.3      |
| 150°-160° | 1043.9  | 10.3      |
| 160°-170° | 692.3   | 6.8       |
| 170°-180° | 242.0   | 2.4       |
| 0°-30°    | 881.9   | 8.7       |
| 0°-40°    | 1414.7  | 13.9      |
| 0°-60°    | 2411.0  | 23.8      |
| 0°-90°    | 3006.6  | 29.6      |
| 90°-120°  | 1520.1  | 15.0      |
| 90°-150°  | 5164.3  | 50.9      |
| 90°-180°  | 7143.0  | 70.4      |
| 0°-180°   | 10149.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1179 | 1179  | 1179 | 1179  | 1179 |      |
| 5°   | 1179 | 1174  | 1162 | 1171  | 1169 | 112  |
| 15°  | 1122 | 1116  | 1101 | 1105  | 1100 | 316  |
| 25°  | 1016 | 1007  | 987  | 990   | 987  | 467  |
| 35°  | 876  | 865   | 847  | 840   | 834  | 547  |
| 45°  | 713  | 705   | 688  | 676   | 671  | 550  |
| 55°  | 540  | 533   | 519  | 506   | 500  | 482  |
| 65°  | 364  | 357   | 346  | 336   | 330  | 360  |
| 75°  | 190  | 188   | 182  | 176   | 178  | 203  |
| 85°  | 46   | 45    | 44   | 41    | 40   | 52   |
| 90°  | 2    | 28    | 76   | 71    | 73   | 10   |
| 95°  | 112  | 134   | 138  | 138   | 134  | 125  |
| 105° | 464  | 470   | 474  | 478   | 478  | 489  |
| 115° | 863  | 875   | 871  | 869   | 863  | 853  |
| 125° | 1255 | 1274  | 1268 | 1261  | 1259 | 1121 |
| 135° | 1623 | 1647  | 1652 | 1649  | 1643 | 1254 |
| 145° | 1970 | 1986  | 1998 | 2000  | 1992 | 1231 |
| 155° | 2253 | 2259  | 2266 | 2277  | 2270 | 1037 |
| 165° | 2451 | 2449  | 2449 | 2464  | 2453 | 691  |
| 175° | 2550 | 2544  | 2540 | 2555  | 2542 | 242  |
| 180° | 2555 | 2555  | 2555 | 2555  | 2555 |      |

TEST NUMBER: P909836

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1178.8 | 1178.8 | 1178.8 | 1178.8 | 1178.8 |
| 2.5°   | 1185.7 | 1180.0 | 1167.5 | 1178.8 | 1176.7 |
| 5°     | 1178.8 | 1174.4 | 1161.9 | 1170.9 | 1168.7 |
| 7.5°   | 1170.9 | 1164.2 | 1151.7 | 1160.8 | 1158.5 |
| 10°    | 1158.5 | 1150.5 | 1137.0 | 1146.0 | 1142.7 |
| 12.5°  | 1141.5 | 1134.7 | 1121.2 | 1126.7 | 1124.5 |
| 15°    | 1122.2 | 1115.5 | 1100.7 | 1105.2 | 1099.5 |
| 17.5°  | 1098.3 | 1091.7 | 1076.8 | 1082.5 | 1076.8 |
| 20°    | 1072.3 | 1065.5 | 1049.7 | 1053.0 | 1048.5 |
| 22.5°  | 1046.3 | 1036.1 | 1021.3 | 1021.3 | 1019.0 |
| 25°    | 1015.6 | 1006.6 | 987.3  | 989.6  | 987.3  |
| 27.5°  | 981.6  | 973.6  | 959.0  | 955.6  | 950.0  |
| 30°    | 947.7  | 938.6  | 921.6  | 918.2  | 913.6  |
| 32.5°  | 911.4  | 904.6  | 886.5  | 879.6  | 875.0  |
| 35°    | 876.3  | 864.9  | 846.8  | 839.9  | 834.2  |
| 37.5°  | 836.6  | 826.4  | 808.2  | 800.2  | 794.6  |
| 40°    | 795.8  | 786.7  | 768.5  | 758.4  | 753.9  |
| 42.5°  | 756.1  | 747.0  | 728.9  | 717.5  | 710.7  |
| 45°    | 713.1  | 705.1  | 688.0  | 675.6  | 671.1  |
| 47.5°  | 671.1  | 663.2  | 645.0  | 632.5  | 625.7  |
| 50°    | 626.8  | 621.2  | 605.3  | 589.5  | 583.8  |
| 52.5°  | 583.8  | 575.8  | 561.2  | 548.7  | 540.7  |
| 55°    | 539.7  | 532.8  | 519.2  | 505.6  | 500.0  |
| 57.5°  | 495.3  | 489.7  | 474.9  | 461.3  | 456.8  |
| 60°    | 451.1  | 446.7  | 430.8  | 418.3  | 415.0  |
| 62.5°  | 408.1  | 400.1  | 388.8  | 377.5  | 372.9  |
| 65°    | 364.0  | 357.1  | 345.8  | 335.6  | 329.9  |
| 67.5°  | 318.6  | 312.9  | 302.7  | 294.8  | 290.2  |
| 70°    | 276.6  | 272.1  | 261.9  | 253.9  | 249.4  |
| 72.5°  | 233.6  | 228.9  | 223.3  | 215.4  | 212.1  |
| 75°    | 190.4  | 188.2  | 182.5  | 175.7  | 178.0  |
| 77.5°  | 151.9  | 147.3  | 145.0  | 141.7  | 138.4  |
| 80°    | 113.4  | 112.2  | 109.9  | 106.5  | 104.3  |
| 82.5°  | 77.1   | 77.1   | 76.0   | 71.4   | 71.4   |
| 85°    | 46.5   | 45.3   | 44.2   | 40.8   | 39.7   |
| 87.5°  | 20.4   | 18.2   | 15.9   | 12.5   | 11.3   |
| 90°    | 2.3    | 27.8   | 75.5   | 70.9   | 73.2   |
| 92.5°  | 47.8   | 64.7   | 67.1   | 69.3   | 69.3   |
| 95°    | 112.5  | 134.0  | 137.8  | 137.8  | 134.0  |
| 97.5°  | 187.2  | 207.2  | 215.7  | 215.7  | 215.7  |
| 100°   | 273.5  | 291.1  | 297.3  | 297.3  | 295.0  |
| 102.5° | 364.4  | 377.5  | 385.9  | 388.2  | 385.9  |
| 105°   | 463.7  | 469.9  | 474.5  | 478.4  | 478.4  |
| 107.5° | 562.3  | 571.6  | 571.6  | 573.1  | 562.3  |
| 110°   | 657.8  | 670.1  | 670.1  | 670.1  | 664.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 761.0  | 774.2  | 771.8  | 765.7  | 761.0  |
| 115°   | 862.7  | 875.0  | 871.2  | 868.9  | 862.7  |
| 117.5° | 963.6  | 980.6  | 969.8  | 963.6  | 957.5  |
| 120°   | 1065.3 | 1082.3 | 1065.3 | 1065.3 | 1058.3 |
| 122.5° | 1157.7 | 1179.3 | 1168.5 | 1162.4 | 1157.7 |
| 125°   | 1254.8 | 1274.0 | 1267.9 | 1260.9 | 1258.7 |
| 127.5° | 1349.6 | 1373.4 | 1364.9 | 1355.7 | 1349.6 |
| 130°   | 1438.1 | 1465.8 | 1462.0 | 1457.4 | 1449.0 |
| 132.5° | 1537.5 | 1559.0 | 1560.6 | 1549.8 | 1543.7 |
| 135°   | 1623.0 | 1646.9 | 1651.5 | 1649.2 | 1643.1 |
| 137.5° | 1718.5 | 1737.8 | 1741.6 | 1740.1 | 1730.8 |
| 140°   | 1802.5 | 1821.7 | 1832.5 | 1832.5 | 1824.0 |
| 142.5° | 1888.8 | 1908.0 | 1914.2 | 1916.5 | 1908.0 |
| 145°   | 1970.4 | 1985.8 | 1998.1 | 2000.4 | 1992.0 |
| 147.5° | 2043.6 | 2062.9 | 2072.0 | 2076.0 | 2067.5 |
| 150°   | 2119.1 | 2132.1 | 2140.6 | 2147.6 | 2140.6 |
| 152.5° | 2186.1 | 2199.2 | 2210.0 | 2218.5 | 2210.0 |
| 155°   | 2253.1 | 2259.3 | 2266.2 | 2276.9 | 2270.1 |
| 157.5° | 2310.9 | 2315.5 | 2319.4 | 2334.7 | 2324.0 |
| 160°   | 2362.5 | 2367.1 | 2369.4 | 2382.5 | 2373.3 |
| 162.5° | 2410.2 | 2410.2 | 2412.6 | 2427.2 | 2416.4 |
| 165°   | 2451.0 | 2448.7 | 2448.7 | 2464.2 | 2453.4 |
| 167.5° | 2488.0 | 2481.1 | 2481.1 | 2496.5 | 2485.7 |
| 170°   | 2515.8 | 2509.6 | 2507.3 | 2522.7 | 2509.6 |
| 172.5° | 2535.1 | 2528.9 | 2526.6 | 2541.9 | 2528.9 |
| 175°   | 2550.4 | 2544.3 | 2539.6 | 2555.1 | 2541.9 |
| 177.5° | 2558.9 | 2552.7 | 2548.1 | 2561.2 | 2548.1 |
| 180°   | 2555.1 | 2555.1 | 2555.1 | 2555.1 | 2555.1 |

TEST NUMBER: P909836

CATALOG NUMBER: DFN2DIP-TR3F0-030D080US840-FLLFLL

**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 | 6.29             | 6.99  | 7.40  | 8.10  | 9.64  | 5.86           | 6.56  | 6.97  | 7.67  | 9.21  |
|                 | 3H   | 7.93             | 8.56  | 9.05  | 9.67  | 11.23 | 7.46           | 8.09  | 8.58  | 9.21  | 10.76 |
|                 | 4H   | 8.50             | 9.10  | 9.63  | 10.22 | 11.77 | 8.03           | 8.63  | 9.16  | 9.75  | 11.31 |
|                 | 6H   | 8.88             | 9.44  | 10.03 | 10.56 | 12.13 | 8.42           | 8.97  | 9.56  | 10.09 | 11.66 |
|                 | 8H   | 8.98             | 9.51  | 10.13 | 10.64 | 12.20 | 8.51           | 9.04  | 9.66  | 10.17 | 11.73 |
|                 | 12H  | 9.02             | 9.52  | 10.17 | 10.65 | 12.23 | 8.55           | 9.04  | 9.70  | 10.17 | 11.76 |
| 4H              | 2H   | 6.73             | 7.32  | 7.87  | 8.44  | 10.00 | 6.38           | 6.98  | 7.52  | 8.10  | 9.66  |
|                 | 3H   | 8.57             | 9.07  | 9.71  | 10.21 | 11.78 | 8.18           | 8.68  | 9.32  | 9.82  | 11.39 |
|                 | 4H   | 9.27             | 9.73  | 10.42 | 10.86 | 12.45 | 8.87           | 9.33  | 10.01 | 10.46 | 12.05 |
|                 | 6H   | 9.76             | 10.16 | 10.92 | 11.31 | 12.89 | 9.36           | 9.75  | 10.51 | 10.91 | 12.49 |
|                 | 8H   | 9.91             | 10.27 | 11.06 | 11.42 | 13.02 | 9.50           | 9.87  | 10.65 | 11.01 | 12.61 |
|                 | 12H  | 9.97             | 10.30 | 11.14 | 11.46 | 13.06 | 9.55           | 9.88  | 10.72 | 11.04 | 12.65 |
| 8H              | 4H   | 9.45             | 9.81  | 10.60 | 10.96 | 12.56 | 9.09           | 9.46  | 10.24 | 10.61 | 12.20 |
|                 | 6H   | 10.06            | 10.36 | 11.23 | 11.55 | 13.15 | 9.70           | 10.01 | 10.88 | 11.20 | 12.79 |
|                 | 8H   | 10.27            | 10.54 | 11.45 | 11.71 | 13.32 | 9.91           | 10.17 | 11.09 | 11.34 | 12.96 |
|                 | 12H  | 10.39            | 10.62 | 11.57 | 11.79 | 13.44 | 10.01          | 10.25 | 11.20 | 11.41 | 13.06 |
| 12H             | 4H   | 9.42             | 9.76  | 10.59 | 10.92 | 12.52 | 9.08           | 9.41  | 10.25 | 10.57 | 12.17 |
|                 | 6H   | 10.09            | 10.35 | 11.27 | 11.52 | 13.13 | 9.74           | 10.00 | 10.92 | 11.17 | 12.79 |
|                 | 8H   | 10.31            | 10.55 | 11.50 | 11.71 | 13.36 | 9.96           | 10.19 | 11.15 | 11.36 | 13.01 |