

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: P912477

Luminaire Tested: DFN2DIP-TR2F0-030D050US850-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912477  
REPORT IS A COMBINATION OF REPORTS P901773 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-030D050US850-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

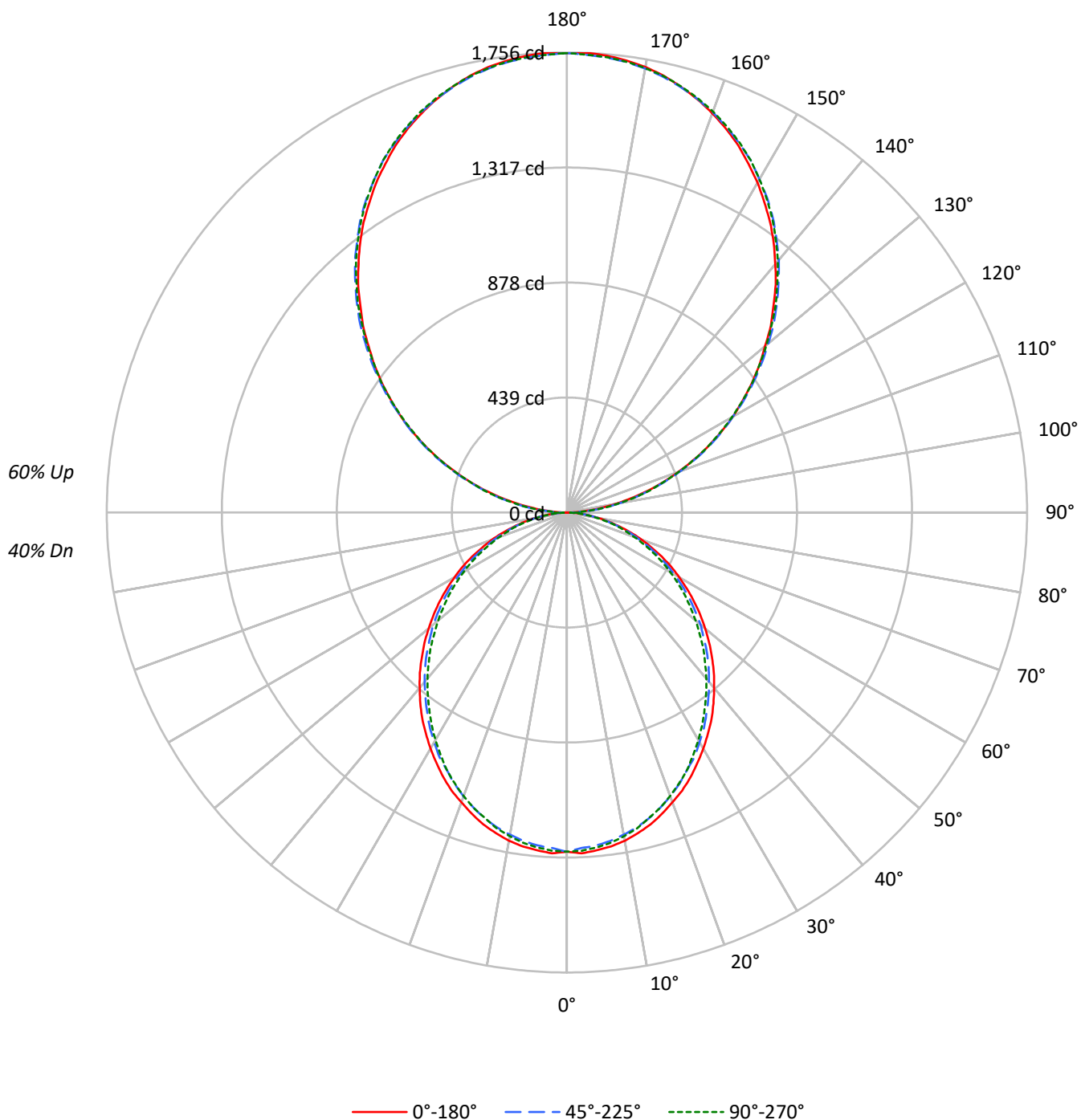
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8201.1 lumens  
Efficiency: N/A  
Efficacy: 128.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 63.7  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

**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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 78 | 78 | 78 | 62 | 62 | 62 | 47 | 47 | 47 |
| 1   | 96  | 91  | 87  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 53 | 51 | 42 | 41 | 40 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 60 | 56 | 53 | 48 | 45 | 43 | 37 | 35 | 33 |
| 3   | 79  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 48 | 44 | 42 | 39 | 36 | 32 | 30 | 28 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 38 | 34 | 31 | 29 | 27 | 25 |
| 5   | 67  | 55  | 47  | 41  | 60 | 51 | 44 | 38 | 42 | 37 | 33 | 34 | 30 | 27 | 26 | 23 | 21 |
| 6   | 61  | 49  | 41  | 36  | 56 | 45 | 38 | 33 | 38 | 32 | 28 | 30 | 27 | 24 | 24 | 21 | 19 |
| 7   | 57  | 45  | 37  | 31  | 51 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 52  | 40  | 33  | 28  | 48 | 37 | 30 | 26 | 31 | 26 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 18 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 41 | 31 | 25 | 20 | 26 | 21 | 18 | 21 | 18 | 15 | 17 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2887 | 2887 | 2887 |
| 5°  | 2888 | 2841 | 2861 |
| 10° | 2860 | 2796 | 2818 |
| 15° | 2814 | 2744 | 2752 |
| 20° | 2752 | 2673 | 2685 |
| 25° | 2692 | 2591 | 2609 |
| 30° | 2616 | 2513 | 2513 |
| 35° | 2545 | 2422 | 2412 |
| 40° | 2457 | 2331 | 2315 |
| 45° | 2370 | 2239 | 2216 |
| 50° | 2274 | 2142 | 2102 |
| 55° | 2173 | 2030 | 1996 |
| 60° | 2059 | 1898 | 1874 |
| 65° | 1934 | 1760 | 1731 |
| 70° | 1775 | 1593 | 1575 |
| 75° | 1555 | 1392 | 1425 |
| 80° | 1289 | 1135 | 1152 |
| 85° | 879  | 716  | 716  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2370 cd/sqm

TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 121.8  | 1.5       |
| 10°-20°   | 342.8  | 4.2       |
| 20°-30°   | 503.8  | 6.1       |
| 30°-40°   | 585.2  | 7.1       |
| 40°-50°   | 584.4  | 7.1       |
| 50°-60°   | 509.6  | 6.2       |
| 60°-70°   | 376.7  | 4.6       |
| 70°-80°   | 213.1  | 2.6       |
| 80°-90°   | 61.2   | 0.7       |
| 90°-100°  | 108.5  | 1.3       |
| 100°-110° | 344.8  | 4.2       |
| 110°-120° | 590.1  | 7.2       |
| 120°-130° | 776.0  | 9.5       |
| 130°-140° | 871.0  | 10.6      |
| 140°-150° | 854.2  | 10.4      |
| 150°-160° | 716.5  | 8.7       |
| 160°-170° | 475.2  | 5.8       |
| 170°-180° | 166.1  | 2.0       |
| 0°-30°    | 968.5  | 11.8      |
| 0°-40°    | 1553.6 | 18.9      |
| 0°-60°    | 2647.7 | 32.3      |
| 0°-90°    | 3298.7 | 40.2      |
| 90°-120°  | 1043.4 | 12.7      |
| 90°-150°  | 3544.6 | 43.2      |
| 90°-180°  | 4902.0 | 59.8      |
| 0°-180°   | 8201.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1294 | 1294  | 1294 | 1294  | 1294 |      |
| 5°   | 1294 | 1290  | 1276 | 1286  | 1283 | 123  |
| 15°  | 1232 | 1225  | 1209 | 1214  | 1208 | 347  |
| 25°  | 1115 | 1106  | 1084 | 1087  | 1084 | 513  |
| 35°  | 962  | 950   | 930  | 922   | 916  | 601  |
| 45°  | 783  | 774   | 756  | 742   | 737  | 604  |
| 55°  | 593  | 585   | 570  | 555   | 549  | 530  |
| 65°  | 400  | 392   | 380  | 368   | 362  | 395  |
| 75°  | 209  | 207   | 200  | 193   | 196  | 223  |
| 85°  | 51   | 50    | 49   | 45    | 44   | 57   |
| 90°  | 2    | 19    | 52   | 49    | 50   | 8    |
| 95°  | 77   | 92    | 95   | 95    | 92   | 86   |
| 105° | 318  | 322   | 326  | 328   | 328  | 336  |
| 115° | 592  | 601   | 598  | 596   | 592  | 586  |
| 125° | 861  | 874   | 870  | 866   | 864  | 770  |
| 135° | 1114 | 1130  | 1134 | 1132  | 1128 | 861  |
| 145° | 1352 | 1363  | 1371 | 1373  | 1367 | 845  |
| 155° | 1546 | 1551  | 1555 | 1563  | 1558 | 712  |
| 165° | 1682 | 1681  | 1681 | 1691  | 1684 | 475  |
| 175° | 1751 | 1746  | 1743 | 1754  | 1745 | 166  |
| 180° | 1754 | 1754  | 1754 | 1754  | 1754 |      |

TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1294.5 | 1294.5 | 1294.5 | 1294.5 | 1294.5 |
| 2.5°   | 1302.1 | 1295.9 | 1282.1 | 1294.5 | 1292.2 |
| 5°     | 1294.5 | 1289.7 | 1275.9 | 1285.9 | 1283.4 |
| 7.5°   | 1285.9 | 1278.5 | 1264.7 | 1274.8 | 1272.2 |
| 10°    | 1272.2 | 1263.5 | 1248.6 | 1258.5 | 1254.8 |
| 12.5°  | 1253.5 | 1246.1 | 1231.2 | 1237.3 | 1234.9 |
| 15°    | 1232.3 | 1225.0 | 1208.7 | 1213.7 | 1207.5 |
| 17.5°  | 1206.1 | 1198.8 | 1182.5 | 1188.7 | 1182.5 |
| 20°    | 1177.5 | 1170.1 | 1152.7 | 1156.4 | 1151.5 |
| 22.5°  | 1149.0 | 1137.8 | 1121.5 | 1121.5 | 1119.0 |
| 25°    | 1115.3 | 1105.5 | 1084.3 | 1086.7 | 1084.3 |
| 27.5°  | 1077.9 | 1069.2 | 1053.1 | 1049.4 | 1043.2 |
| 30°    | 1040.7 | 1030.7 | 1012.1 | 1008.3 | 1003.3 |
| 32.5°  | 1000.9 | 993.4  | 973.5  | 965.9  | 960.9  |
| 35°    | 962.3  | 949.9  | 929.9  | 922.4  | 916.1  |
| 37.5°  | 918.7  | 907.5  | 887.5  | 878.8  | 872.6  |
| 40°    | 873.9  | 863.9  | 843.9  | 832.9  | 827.9  |
| 42.5°  | 830.3  | 820.3  | 800.5  | 787.9  | 780.5  |
| 45°    | 783.1  | 774.3  | 755.6  | 741.9  | 736.9  |
| 47.5°  | 736.9  | 728.3  | 708.3  | 694.6  | 687.1  |
| 50°    | 688.4  | 682.1  | 664.7  | 647.3  | 641.1  |
| 52.5°  | 641.1  | 632.4  | 616.3  | 602.5  | 593.8  |
| 55°    | 592.6  | 585.1  | 570.1  | 555.3  | 549.1  |
| 57.5°  | 544.0  | 537.8  | 521.6  | 506.6  | 501.6  |
| 60°    | 495.4  | 490.5  | 473.1  | 459.3  | 455.7  |
| 62.5°  | 448.1  | 439.4  | 427.0  | 414.5  | 409.6  |
| 65°    | 399.7  | 392.1  | 379.7  | 368.5  | 362.3  |
| 67.5°  | 349.9  | 343.6  | 332.4  | 323.7  | 318.7  |
| 70°    | 303.8  | 298.8  | 287.6  | 278.8  | 273.9  |
| 72.5°  | 256.5  | 251.4  | 245.2  | 236.5  | 232.9  |
| 75°    | 209.0  | 206.7  | 200.4  | 193.0  | 195.5  |
| 77.5°  | 166.8  | 161.8  | 159.3  | 155.6  | 151.9  |
| 80°    | 124.5  | 123.2  | 120.7  | 117.0  | 114.6  |
| 82.5°  | 84.6   | 84.6   | 83.5   | 78.4   | 78.4   |
| 85°    | 51.0   | 49.8   | 48.6   | 44.8   | 43.6   |
| 87.5°  | 22.4   | 20.0   | 17.4   | 13.8   | 12.4   |
| 90°    | 1.6    | 19.1   | 51.8   | 48.7   | 50.2   |
| 92.5°  | 32.8   | 44.4   | 46.0   | 47.6   | 47.6   |
| 95°    | 77.2   | 92.0   | 94.6   | 94.6   | 92.0   |
| 97.5°  | 128.4  | 142.2  | 148.1  | 148.1  | 148.1  |
| 100°   | 187.6  | 199.8  | 204.1  | 204.1  | 202.5  |
| 102.5° | 250.1  | 259.1  | 264.8  | 266.5  | 264.8  |
| 105°   | 318.3  | 322.5  | 325.7  | 328.3  | 328.3  |
| 107.5° | 385.9  | 392.3  | 392.3  | 393.4  | 385.9  |
| 110°   | 451.5  | 460.0  | 460.0  | 460.0  | 455.7  |

TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 522.3  | 531.3  | 529.8  | 525.6  | 522.3  |
| 115°   | 592.1  | 600.6  | 598.0  | 596.4  | 592.1  |
| 117.5° | 661.4  | 673.1  | 665.6  | 661.4  | 657.2  |
| 120°   | 731.2  | 742.8  | 731.2  | 731.2  | 726.4  |
| 122.5° | 794.6  | 809.5  | 802.0  | 797.8  | 794.6  |
| 125°   | 861.2  | 874.4  | 870.2  | 865.5  | 863.9  |
| 127.5° | 926.2  | 942.6  | 936.9  | 930.5  | 926.2  |
| 130°   | 987.1  | 1006.1 | 1003.4 | 1000.3 | 994.4  |
| 132.5° | 1055.3 | 1070.1 | 1071.2 | 1063.8 | 1059.5 |
| 135°   | 1114.0 | 1130.3 | 1133.5 | 1132.0 | 1127.7 |
| 137.5° | 1179.5 | 1192.7 | 1195.4 | 1194.3 | 1188.0 |
| 140°   | 1237.1 | 1250.4 | 1257.7 | 1257.7 | 1252.0 |
| 142.5° | 1296.3 | 1309.6 | 1313.8 | 1315.4 | 1309.6 |
| 145°   | 1352.4 | 1363.0 | 1371.4 | 1373.1 | 1367.2 |
| 147.5° | 1402.7 | 1415.9 | 1422.2 | 1424.8 | 1419.0 |
| 150°   | 1454.5 | 1463.4 | 1469.2 | 1474.0 | 1469.2 |
| 152.5° | 1500.5 | 1509.5 | 1516.8 | 1522.7 | 1516.8 |
| 155°   | 1546.4 | 1550.6 | 1555.4 | 1562.8 | 1558.0 |
| 157.5° | 1586.1 | 1589.2 | 1591.9 | 1602.5 | 1595.1 |
| 160°   | 1621.5 | 1624.7 | 1626.2 | 1635.2 | 1628.9 |
| 162.5° | 1654.3 | 1654.3 | 1655.8 | 1665.9 | 1658.5 |
| 165°   | 1682.4 | 1680.7 | 1680.7 | 1691.3 | 1683.9 |
| 167.5° | 1707.6 | 1702.9 | 1702.9 | 1713.5 | 1706.1 |
| 170°   | 1726.7 | 1722.5 | 1720.9 | 1731.5 | 1722.5 |
| 172.5° | 1739.9 | 1735.7 | 1734.1 | 1744.7 | 1735.7 |
| 175°   | 1750.6 | 1746.2 | 1743.1 | 1753.7 | 1744.7 |
| 177.5° | 1756.3 | 1752.1 | 1748.9 | 1757.9 | 1748.9 |
| 180°   | 1753.7 | 1753.7 | 1753.7 | 1753.7 | 1753.7 |



TEST NUMBER: P912477

CATALOG NUMBER: DFN2DIP-TR2F0-030D050US850-FLLONL

**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 | 9.85             | 10.63 | 10.89 | 11.67 | 13.08 | 9.42           | 10.20 | 10.46 | 11.25 | 12.65 |
|                 | 3H   | 11.48            | 12.18 | 12.53 | 13.23 | 14.65 | 11.02          | 11.72 | 12.06 | 12.77 | 14.19 |
|                 | 4H   | 12.05            | 12.71 | 13.11 | 13.76 | 15.19 | 11.59          | 12.25 | 12.65 | 13.30 | 14.73 |
|                 | 6H   | 12.42            | 13.03 | 13.49 | 14.09 | 15.54 | 11.96          | 12.57 | 13.03 | 13.63 | 15.08 |
|                 | 8H   | 12.52            | 13.10 | 13.59 | 14.17 | 15.61 | 12.06          | 12.64 | 13.13 | 13.71 | 15.15 |
|                 | 12H  | 12.55            | 13.11 | 13.63 | 14.17 | 15.64 | 12.09          | 12.64 | 13.17 | 13.71 | 15.17 |
| 4H              | 2H   | 10.29            | 10.95 | 11.36 | 12.01 | 13.44 | 9.95           | 10.61 | 11.02 | 11.67 | 13.10 |
|                 | 3H   | 12.12            | 12.68 | 13.19 | 13.76 | 15.20 | 11.74          | 12.29 | 12.81 | 13.37 | 14.82 |
|                 | 4H   | 12.81            | 13.32 | 13.89 | 14.39 | 15.86 | 12.42          | 12.93 | 13.50 | 14.00 | 15.46 |
|                 | 6H   | 13.30            | 13.74 | 14.39 | 14.83 | 16.29 | 12.91          | 13.34 | 13.99 | 14.44 | 15.90 |
|                 | 8H   | 13.44            | 13.85 | 14.53 | 14.93 | 16.41 | 13.04          | 13.45 | 14.13 | 14.54 | 16.01 |
|                 | 12H  | 13.50            | 13.86 | 14.60 | 14.97 | 16.45 | 13.09          | 13.46 | 14.20 | 14.56 | 16.04 |
| 8H              | 4H   | 12.99            | 13.40 | 14.08 | 14.49 | 15.96 | 12.64          | 13.05 | 13.73 | 14.14 | 15.61 |
|                 | 6H   | 13.59            | 13.93 | 14.70 | 15.06 | 16.53 | 13.24          | 13.58 | 14.35 | 14.71 | 16.18 |
|                 | 8H   | 13.80            | 14.09 | 14.91 | 15.20 | 16.70 | 13.44          | 13.74 | 14.56 | 14.85 | 16.34 |
|                 | 12H  | 13.91            | 14.17 | 15.03 | 15.28 | 16.81 | 13.54          | 13.80 | 14.66 | 14.91 | 16.44 |
| 12H             | 4H   | 12.97            | 13.34 | 14.08 | 14.44 | 15.92 | 12.63          | 13.00 | 13.73 | 14.10 | 15.58 |
|                 | 6H   | 13.62            | 13.91 | 14.73 | 15.03 | 16.52 | 13.28          | 13.57 | 14.39 | 14.68 | 16.18 |
|                 | 8H   | 13.84            | 14.10 | 14.96 | 15.21 | 16.74 | 13.49          | 13.75 | 14.61 | 14.86 | 16.39 |