

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: P915867

Luminaire Tested: DFN2DIP-4P3F0-040D050US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915867  
REPORT IS A COMBINATION OF REPORTS P900583 AND P897473  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-040D050US930-FLLONL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

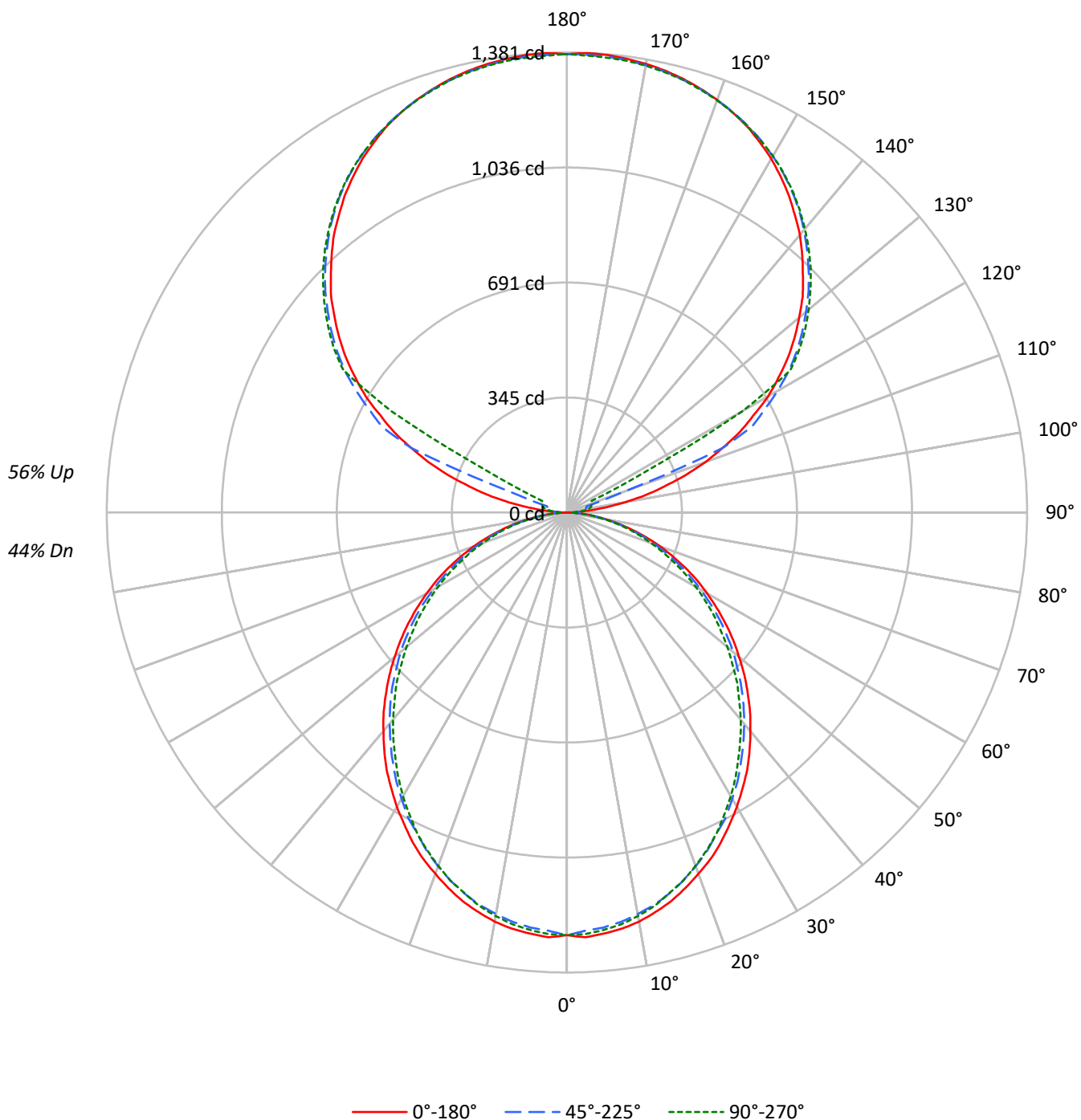
Lumens per Lamp: N/A  
Luminaire Lumens: 7264.3 lumens  
Efficiency: N/A  
Efficacy: 95.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 75.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLONL

**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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 |
| 1   | 97  | 92  | 88  | 85  | 88 | 85 | 81 | 78 | 70 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 |
| 2   | 88  | 81  | 74  | 69  | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 36 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 35 | 33 | 31 |
| 4   | 73  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 35 | 31 | 28 | 28 | 25 | 23 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 20 |
| 7   | 57  | 45  | 37  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 35 | 28 | 23 | 29 | 24 | 20 | 25 | 20 | 18 | 20 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1446 | 1446 | 1446 |
| 5°  | 1447 | 1425 | 1435 |
| 10° | 1435 | 1405 | 1415 |
| 15° | 1413 | 1381 | 1384 |
| 20° | 1383 | 1348 | 1353 |
| 25° | 1354 | 1308 | 1316 |
| 30° | 1318 | 1272 | 1270 |
| 35° | 1283 | 1228 | 1222 |
| 40° | 1240 | 1185 | 1175 |
| 45° | 1198 | 1141 | 1128 |
| 50° | 1152 | 1095 | 1072 |
| 55° | 1103 | 1042 | 1022 |
| 60° | 1048 | 979  | 964  |
| 65° | 988  | 913  | 895  |
| 70° | 911  | 834  | 821  |
| 75° | 805  | 738  | 752  |
| 80° | 676  | 616  | 622  |
| 85° | 477  | 408  | 407  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1198 cd/sqm

TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 119.4  | 1.6       |
| 10°-20°   | 336.0  | 4.6       |
| 20°-30°   | 493.8  | 6.8       |
| 30°-40°   | 573.6  | 7.9       |
| 40°-50°   | 572.9  | 7.9       |
| 50°-60°   | 499.5  | 6.9       |
| 60°-70°   | 369.3  | 5.1       |
| 70°-80°   | 208.9  | 2.9       |
| 80°-90°   | 57.6   | 0.8       |
| 90°-100°  | 45.4   | 0.6       |
| 100°-110° | 169.1  | 2.3       |
| 110°-120° | 448.5  | 6.2       |
| 120°-130° | 743.9  | 10.2      |
| 130°-140° | 790.2  | 10.9      |
| 140°-150° | 734.4  | 10.1      |
| 150°-160° | 590.4  | 8.1       |
| 160°-170° | 380.5  | 5.2       |
| 170°-180° | 130.9  | 1.8       |
| 0°-30°    | 949.3  | 13.1      |
| 0°-40°    | 1522.9 | 21.0      |
| 0°-60°    | 2595.3 | 35.7      |
| 0°-90°    | 3231.0 | 44.5      |
| 90°-120°  | 663.0  | 9.1       |
| 90°-150°  | 2931.5 | 40.4      |
| 90°-180°  | 4033.0 | 55.5      |
| 0°-180°   | 7264.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1269 | 1269  | 1269 | 1269  | 1269 |      |
| 5°   | 1269 | 1264  | 1251 | 1260  | 1258 | 120  |
| 15°  | 1208 | 1201  | 1185 | 1190  | 1184 | 340  |
| 25°  | 1093 | 1084  | 1063 | 1065  | 1063 | 503  |
| 35°  | 943  | 931   | 912  | 904   | 898  | 589  |
| 45°  | 768  | 759   | 741  | 727   | 722  | 592  |
| 55°  | 581  | 574   | 559  | 544   | 538  | 519  |
| 65°  | 392  | 384   | 372  | 361   | 355  | 387  |
| 75°  | 205  | 203   | 196  | 189   | 192  | 219  |
| 85°  | 50   | 49    | 48   | 44    | 43   | 56   |
| 90°  | 1    | 12    | 20   | 25    | 27   | 7    |
| 95°  | 65   | 32    | 39   | 44    | 43   | 77   |
| 105° | 303  | 333   | 61   | 72    | 76   | 323  |
| 115° | 572  | 589   | 614  | 153   | 82   | 564  |
| 125° | 809  | 822   | 841  | 848   | 851  | 722  |
| 135° | 1002 | 1018  | 1026 | 1036  | 1034 | 774  |
| 145° | 1162 | 1161  | 1178 | 1185  | 1180 | 727  |
| 155° | 1279 | 1270  | 1282 | 1288  | 1280 | 589  |
| 165° | 1348 | 1342  | 1345 | 1352  | 1345 | 381  |
| 175° | 1379 | 1372  | 1374 | 1381  | 1371 | 131  |
| 180° | 1376 | 1376  | 1376 | 1376  | 1376 |      |

TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1268.9 | 1268.9 | 1268.9 | 1268.9 | 1268.9 |
| 2.5°   | 1276.3 | 1270.2 | 1256.8 | 1268.9 | 1266.6 |
| 5°     | 1268.9 | 1264.1 | 1250.7 | 1260.4 | 1258.1 |
| 7.5°   | 1260.4 | 1253.1 | 1239.7 | 1249.5 | 1247.1 |
| 10°    | 1247.1 | 1238.5 | 1223.9 | 1233.6 | 1230.0 |
| 12.5°  | 1228.7 | 1221.4 | 1206.8 | 1212.9 | 1210.4 |
| 15°    | 1207.9 | 1200.7 | 1184.8 | 1189.7 | 1183.6 |
| 17.5°  | 1182.3 | 1175.1 | 1159.2 | 1165.2 | 1159.2 |
| 20°    | 1154.2 | 1147.0 | 1129.9 | 1133.5 | 1128.8 |
| 22.5°  | 1126.3 | 1115.2 | 1099.3 | 1099.3 | 1096.9 |
| 25°    | 1093.2 | 1083.5 | 1062.8 | 1065.2 | 1062.8 |
| 27.5°  | 1056.6 | 1048.1 | 1032.3 | 1028.7 | 1022.6 |
| 30°    | 1020.1 | 1010.3 | 992.1  | 988.4  | 983.5  |
| 32.5°  | 981.0  | 973.8  | 954.2  | 946.9  | 941.9  |
| 35°    | 943.2  | 931.1  | 911.5  | 904.2  | 898.1  |
| 37.5°  | 900.5  | 889.5  | 869.9  | 861.4  | 855.3  |
| 40°    | 856.6  | 846.8  | 827.2  | 816.4  | 811.5  |
| 42.5°  | 813.9  | 804.0  | 784.6  | 772.3  | 765.1  |
| 45°    | 767.5  | 759.0  | 740.6  | 727.3  | 722.4  |
| 47.5°  | 722.4  | 713.8  | 694.3  | 680.9  | 673.6  |
| 50°    | 674.7  | 668.6  | 651.6  | 634.5  | 628.4  |
| 52.5°  | 628.4  | 619.9  | 604.1  | 590.6  | 582.0  |
| 55°    | 580.9  | 573.5  | 558.9  | 544.2  | 538.2  |
| 57.5°  | 533.2  | 527.2  | 511.2  | 496.6  | 491.7  |
| 60°    | 485.6  | 480.8  | 463.7  | 450.3  | 446.6  |
| 62.5°  | 439.3  | 430.7  | 418.6  | 406.3  | 401.5  |
| 65°    | 391.8  | 384.3  | 372.2  | 361.2  | 355.1  |
| 67.5°  | 342.9  | 336.7  | 325.9  | 317.3  | 312.4  |
| 70°    | 297.7  | 292.9  | 281.8  | 273.3  | 268.5  |
| 72.5°  | 251.4  | 246.5  | 240.4  | 231.9  | 228.2  |
| 75°    | 205.0  | 202.6  | 196.4  | 189.1  | 191.6  |
| 77.5°  | 163.5  | 158.6  | 156.1  | 152.5  | 148.9  |
| 80°    | 122.1  | 120.7  | 118.3  | 114.7  | 112.3  |
| 82.5°  | 83.0   | 83.0   | 81.9   | 76.9   | 76.9   |
| 85°    | 50.0   | 48.8   | 47.6   | 43.9   | 42.7   |
| 87.5°  | 22.0   | 19.6   | 17.1   | 13.5   | 12.1   |
| 90°    | 1.0    | 11.9   | 19.9   | 24.9   | 26.8   |
| 92.5°  | 24.9   | 21.0   | 23.9   | 25.9   | 26.8   |
| 95°    | 64.7   | 31.8   | 38.8   | 43.9   | 42.8   |
| 97.5°  | 116.4  | 34.9   | 50.7   | 53.8   | 54.7   |
| 100°   | 176.3  | 39.9   | 56.7   | 64.7   | 66.7   |
| 102.5° | 241.9  | 239.9  | 58.8   | 69.6   | 72.7   |
| 105°   | 302.6  | 332.6  | 60.7   | 71.7   | 75.7   |
| 107.5° | 373.3  | 398.1  | 62.8   | 73.6   | 77.7   |
| 110°   | 441.1  | 461.9  | 174.2  | 74.7   | 78.6   |

TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.8  | 522.6  | 505.7  | 76.6   | 79.7   |
| 115°   | 572.4  | 589.3  | 614.2  | 153.4  | 81.7   |
| 117.5° | 631.1  | 651.0  | 668.1  | 525.5  | 264.8  |
| 120°   | 696.8  | 711.8  | 729.7  | 741.7  | 607.2  |
| 122.5° | 752.5  | 768.5  | 788.5  | 794.4  | 795.5  |
| 125°   | 809.3  | 822.3  | 841.2  | 848.2  | 851.2  |
| 127.5° | 861.0  | 875.0  | 890.1  | 899.9  | 900.9  |
| 130°   | 909.9  | 925.9  | 936.7  | 947.7  | 946.8  |
| 132.5° | 959.7  | 972.7  | 983.5  | 992.5  | 991.6  |
| 135°   | 1001.5 | 1017.5 | 1026.3 | 1036.4 | 1034.4 |
| 137.5° | 1045.2 | 1057.2 | 1067.2 | 1077.2 | 1074.2 |
| 140°   | 1088.0 | 1096.1 | 1106.9 | 1115.9 | 1111.0 |
| 142.5° | 1124.0 | 1131.0 | 1143.9 | 1151.8 | 1146.8 |
| 145°   | 1161.8 | 1160.7 | 1177.6 | 1184.6 | 1179.7 |
| 147.5° | 1194.6 | 1191.6 | 1208.5 | 1213.5 | 1209.6 |
| 150°   | 1226.5 | 1219.5 | 1235.4 | 1241.4 | 1236.4 |
| 152.5° | 1253.3 | 1245.4 | 1260.3 | 1266.3 | 1259.3 |
| 155°   | 1279.2 | 1270.3 | 1282.2 | 1288.2 | 1280.3 |
| 157.5° | 1300.1 | 1292.2 | 1301.1 | 1308.1 | 1300.1 |
| 160°   | 1318.1 | 1312.1 | 1318.1 | 1324.0 | 1317.0 |
| 162.5° | 1333.9 | 1328.0 | 1332.9 | 1339.9 | 1331.0 |
| 165°   | 1347.9 | 1342.0 | 1344.9 | 1351.8 | 1344.9 |
| 167.5° | 1358.9 | 1352.8 | 1355.9 | 1362.9 | 1353.9 |
| 170°   | 1367.8 | 1361.8 | 1363.8 | 1370.8 | 1361.8 |
| 172.5° | 1373.8 | 1367.8 | 1369.9 | 1376.8 | 1367.8 |
| 175°   | 1378.8 | 1371.7 | 1373.8 | 1380.7 | 1370.8 |
| 177.5° | 1380.7 | 1373.8 | 1374.8 | 1381.8 | 1372.8 |
| 180°   | 1375.7 | 1375.7 | 1375.7 | 1375.7 | 1375.7 |

TEST NUMBER: P915867

CATALOG NUMBER: DFN2DIP-4P3F0-040D050US930-FLONL

**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 | 7.99             | 8.80  | 8.99  | 9.81  | 11.16 | 7.54           | 8.36  | 8.55  | 9.37  | 10.72 |
|                 | 3H   | 9.64             | 10.37 | 10.65 | 11.39 | 12.76 | 9.15           | 9.88  | 10.16 | 10.90 | 12.27 |
|                 | 4H   | 10.22            | 10.91 | 11.25 | 11.94 | 13.31 | 9.73           | 10.42 | 10.75 | 11.44 | 12.82 |
|                 | 6H   | 10.62            | 11.25 | 11.65 | 12.28 | 13.67 | 10.12          | 10.75 | 11.15 | 11.78 | 13.17 |
|                 | 8H   | 10.72            | 11.32 | 11.76 | 12.37 | 13.75 | 10.22          | 10.82 | 11.26 | 11.87 | 13.25 |
|                 | 12H  | 10.76            | 11.34 | 11.81 | 12.38 | 13.79 | 10.25          | 10.83 | 11.30 | 11.87 | 13.28 |
| 4H              | 2H   | 8.44             | 9.13  | 9.47  | 10.16 | 11.53 | 8.08           | 8.77  | 9.12  | 9.80  | 11.18 |
|                 | 3H   | 10.29            | 10.87 | 11.34 | 11.93 | 13.31 | 9.89           | 10.46 | 10.93 | 11.52 | 12.91 |
|                 | 4H   | 11.00            | 11.53 | 12.05 | 12.58 | 13.99 | 10.58          | 11.11 | 11.63 | 12.15 | 13.56 |
|                 | 6H   | 11.51            | 11.97 | 12.57 | 13.03 | 14.44 | 11.08          | 11.53 | 12.14 | 12.60 | 14.01 |
|                 | 8H   | 11.66            | 12.08 | 12.72 | 13.14 | 14.57 | 11.22          | 11.65 | 12.28 | 12.71 | 14.13 |
|                 | 12H  | 11.73            | 12.11 | 12.80 | 13.19 | 14.61 | 11.28          | 11.66 | 12.35 | 12.74 | 14.16 |
| 8H              | 4H   | 11.19            | 11.62 | 12.25 | 12.68 | 14.10 | 10.81          | 11.24 | 11.87 | 12.30 | 13.72 |
|                 | 6H   | 11.82            | 12.17 | 12.90 | 13.27 | 14.69 | 11.43          | 11.78 | 12.51 | 12.89 | 14.30 |
|                 | 8H   | 12.03            | 12.34 | 13.12 | 13.43 | 14.87 | 11.64          | 11.95 | 12.73 | 13.03 | 14.47 |
|                 | 12H  | 12.16            | 12.43 | 13.25 | 13.51 | 14.99 | 11.75          | 12.02 | 12.84 | 13.10 | 14.58 |
| 12H             | 4H   | 11.17            | 11.56 | 12.25 | 12.63 | 14.06 | 10.81          | 11.19 | 11.88 | 12.26 | 13.69 |
|                 | 6H   | 11.84            | 12.15 | 12.93 | 13.24 | 14.68 | 11.47          | 11.78 | 12.56 | 12.87 | 14.30 |
|                 | 8H   | 12.08            | 12.35 | 13.17 | 13.43 | 14.91 | 11.70          | 11.97 | 12.79 | 13.05 | 14.53 |