

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: P918590

Luminaire Tested: DFN2DIP-4P3F0-040D040US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

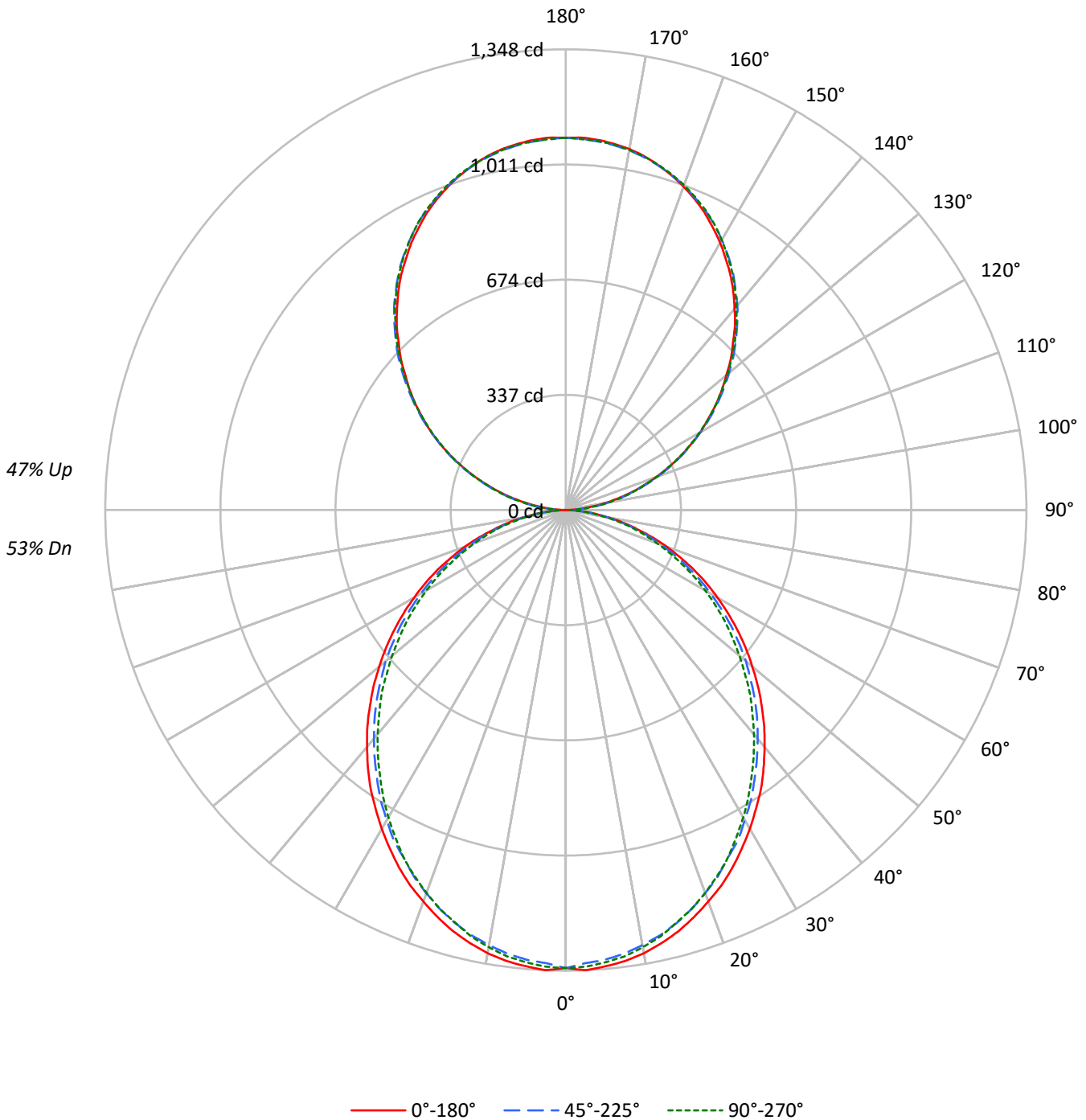
Test Method: LM-79-2019  
Report Number: P918590  
REPORT IS A COMBINATION OF REPORTS P899053 AND P895917  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-040D040US935-FLLFLL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6457.5 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): 67.4  
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

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### Luminous Intensity Polar Plot





TEST NUMBER: P918590

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

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 | 59 | 59 | 59 | 53 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 | 52 | 51 | 50 | 45 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 | 46 | 44 | 42 | 37 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 | 41 | 38 | 36 | 32 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 | 36 | 33 | 31 | 27 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 | 33 | 29 | 27 | 24 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 | 30 | 26 | 24 | 21 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 | 27 | 24 | 21 | 18 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 | 25 | 21 | 19 | 16 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 | 23 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 | 21 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1527 | 1527 | 1527 |
| 5°  | 1529 | 1505 | 1516 |
| 10° | 1515 | 1484 | 1494 |
| 15° | 1492 | 1458 | 1462 |
| 20° | 1461 | 1423 | 1429 |
| 25° | 1430 | 1382 | 1390 |
| 30° | 1391 | 1343 | 1341 |
| 35° | 1355 | 1297 | 1290 |
| 40° | 1310 | 1251 | 1241 |
| 45° | 1265 | 1205 | 1191 |
| 50° | 1216 | 1157 | 1133 |
| 55° | 1165 | 1100 | 1079 |
| 60° | 1106 | 1034 | 1018 |
| 65° | 1043 | 965  | 945  |
| 70° | 962  | 880  | 867  |
| 75° | 850  | 779  | 794  |
| 80° | 714  | 650  | 657  |
| 85° | 503  | 431  | 430  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1265 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 126.1  | 2.0       |
| 10°-20°   | 354.9  | 5.5       |
| 20°-30°   | 521.5  | 8.1       |
| 30°-40°   | 605.7  | 9.4       |
| 40°-50°   | 605.0  | 9.4       |
| 50°-60°   | 527.5  | 8.2       |
| 60°-70°   | 389.9  | 6.0       |
| 70°-80°   | 220.6  | 3.4       |
| 80°-90°   | 61.3   | 0.9       |
| 90°-100°  | 67.4   | 1.0       |
| 100°-110° | 214.2  | 3.3       |
| 110°-120° | 366.5  | 5.7       |
| 120°-130° | 482.0  | 7.5       |
| 130°-140° | 541.0  | 8.4       |
| 140°-150° | 530.5  | 8.2       |
| 150°-160° | 445.0  | 6.9       |
| 160°-170° | 295.1  | 4.6       |
| 170°-180° | 103.2  | 1.6       |
| 0°-30°    | 1002.5 | 15.5      |
| 0°-40°    | 1608.3 | 24.9      |
| 0°-60°    | 2740.7 | 42.4      |
| 0°-90°    | 3412.6 | 52.8      |
| 90°-120°  | 648.0  | 10.0      |
| 90°-150°  | 2201.5 | 34.1      |
| 90°-180°  | 3045.0 | 47.2      |
| 0°-180°   | 6457.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1340 | 1340  | 1340 | 1340  | 1340 |      |
| 5°   | 1340 | 1335  | 1321 | 1331  | 1329 | 127  |
| 15°  | 1276 | 1268  | 1251 | 1256  | 1250 | 359  |
| 25°  | 1154 | 1144  | 1122 | 1125  | 1122 | 531  |
| 35°  | 996  | 983   | 963  | 955   | 948  | 622  |
| 45°  | 810  | 802   | 782  | 768   | 763  | 626  |
| 55°  | 614  | 606   | 590  | 575   | 568  | 548  |
| 65°  | 414  | 406   | 393  | 381   | 375  | 409  |
| 75°  | 216  | 214   | 207  | 200   | 202  | 231  |
| 85°  | 53   | 52    | 50   | 46    | 45   | 59   |
| 90°  | 1    | 12    | 32   | 30    | 31   | 6    |
| 95°  | 48   | 57    | 59   | 59    | 57   | 53   |
| 105° | 198  | 200   | 202  | 204   | 204  | 209  |
| 115° | 368  | 373   | 371  | 370   | 368  | 364  |
| 125° | 535  | 543   | 540  | 538   | 537  | 478  |
| 135° | 692  | 702   | 704  | 703   | 700  | 535  |
| 145° | 840  | 846   | 852  | 853   | 849  | 525  |
| 155° | 960  | 963   | 966  | 971   | 968  | 442  |
| 165° | 1045 | 1044  | 1044 | 1050  | 1046 | 295  |
| 175° | 1087 | 1085  | 1083 | 1089  | 1084 | 103  |
| 180° | 1089 | 1089  | 1089 | 1089  | 1089 |      |



TEST NUMBER: P918590

CATALOG NUMBER: DFN2DIP-4P3F0-040D040US935-FLLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1340.1 | 1340.1 | 1340.1 | 1340.1 | 1340.1 |
| 2.5°   | 1347.9 | 1341.4 | 1327.2 | 1340.1 | 1337.6 |
| 5°     | 1340.1 | 1335.0 | 1320.8 | 1331.0 | 1328.6 |
| 7.5°   | 1331.0 | 1323.4 | 1309.1 | 1319.6 | 1317.0 |
| 10°    | 1317.0 | 1307.9 | 1292.5 | 1302.8 | 1298.9 |
| 12.5°  | 1297.5 | 1289.9 | 1274.4 | 1280.9 | 1278.2 |
| 15°    | 1275.7 | 1268.0 | 1251.2 | 1256.4 | 1250.0 |
| 17.5°  | 1248.6 | 1241.0 | 1224.2 | 1230.5 | 1224.2 |
| 20°    | 1218.9 | 1211.3 | 1193.3 | 1197.0 | 1192.1 |
| 22.5°  | 1189.4 | 1177.8 | 1161.0 | 1161.0 | 1158.4 |
| 25°    | 1154.5 | 1144.3 | 1122.4 | 1124.9 | 1122.4 |
| 27.5°  | 1115.9 | 1106.8 | 1090.2 | 1086.3 | 1079.9 |
| 30°    | 1077.3 | 1066.9 | 1047.7 | 1043.8 | 1038.6 |
| 32.5°  | 1036.0 | 1028.4 | 1007.7 | 1000.0 | 994.7  |
| 35°    | 996.1  | 983.3  | 962.6  | 954.8  | 948.4  |
| 37.5°  | 951.0  | 939.3  | 918.7  | 909.7  | 903.3  |
| 40°    | 904.7  | 894.2  | 873.6  | 862.1  | 857.0  |
| 42.5°  | 859.5  | 849.1  | 828.6  | 815.6  | 808.0  |
| 45°    | 810.5  | 801.6  | 782.1  | 768.1  | 762.8  |
| 47.5°  | 762.8  | 753.8  | 733.2  | 719.0  | 711.4  |
| 50°    | 712.6  | 706.1  | 688.1  | 670.0  | 663.6  |
| 52.5°  | 663.6  | 654.6  | 637.9  | 623.7  | 614.7  |
| 55°    | 613.5  | 605.6  | 590.2  | 574.7  | 568.3  |
| 57.5°  | 563.1  | 556.7  | 539.8  | 524.4  | 519.3  |
| 60°    | 512.8  | 507.7  | 489.7  | 475.5  | 471.7  |
| 62.5°  | 463.9  | 454.9  | 442.0  | 429.1  | 424.0  |
| 65°    | 413.7  | 405.9  | 393.0  | 381.4  | 375.1  |
| 67.5°  | 362.1  | 355.6  | 344.1  | 335.1  | 329.9  |
| 70°    | 314.4  | 309.3  | 297.6  | 288.6  | 283.5  |
| 72.5°  | 265.5  | 260.3  | 253.9  | 244.9  | 241.0  |
| 75°    | 216.5  | 214.0  | 207.4  | 199.8  | 202.3  |
| 77.5°  | 172.6  | 167.5  | 164.9  | 161.0  | 157.2  |
| 80°    | 128.9  | 127.5  | 124.9  | 121.1  | 118.6  |
| 82.5°  | 87.6   | 87.6   | 86.4   | 81.2   | 81.2   |
| 85°    | 52.8   | 51.6   | 50.3   | 46.3   | 45.1   |
| 87.5°  | 23.2   | 20.7   | 18.1   | 14.2   | 12.8   |
| 90°    | 0.9    | 11.8   | 32.2   | 30.2   | 31.2   |
| 92.5°  | 20.3   | 27.6   | 28.6   | 29.5   | 29.5   |
| 95°    | 48.0   | 57.2   | 58.8   | 58.8   | 57.2   |
| 97.5°  | 79.8   | 88.3   | 92.0   | 92.0   | 92.0   |
| 100°   | 116.6  | 124.2  | 126.7  | 126.7  | 125.8  |
| 102.5° | 155.3  | 160.9  | 164.5  | 165.5  | 164.5  |
| 105°   | 197.7  | 200.3  | 202.2  | 203.9  | 203.9  |
| 107.5° | 239.7  | 243.7  | 243.7  | 244.3  | 239.7  |
| 110°   | 280.4  | 285.7  | 285.7  | 285.7  | 283.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 324.4  | 330.0  | 329.0  | 326.4  | 324.4  |
| 115°   | 367.7  | 373.1  | 371.3  | 370.4  | 367.7  |
| 117.5° | 410.8  | 418.0  | 413.5  | 410.8  | 408.2  |
| 120°   | 454.2  | 461.3  | 454.2  | 454.2  | 451.2  |
| 122.5° | 493.5  | 502.7  | 498.2  | 495.5  | 493.5  |
| 125°   | 534.9  | 543.1  | 540.5  | 537.5  | 536.6  |
| 127.5° | 575.3  | 585.5  | 581.9  | 577.9  | 575.3  |
| 130°   | 613.0  | 624.9  | 623.3  | 621.3  | 617.7  |
| 132.5° | 655.4  | 664.6  | 665.3  | 660.6  | 658.1  |
| 135°   | 691.9  | 702.1  | 704.0  | 703.0  | 700.4  |
| 137.5° | 732.6  | 740.8  | 742.4  | 741.7  | 737.9  |
| 140°   | 768.4  | 776.6  | 781.2  | 781.2  | 777.6  |
| 142.5° | 805.2  | 813.4  | 816.0  | 817.0  | 813.4  |
| 145°   | 840.0  | 846.5  | 851.8  | 852.8  | 849.2  |
| 147.5° | 871.2  | 879.3  | 883.3  | 884.9  | 881.3  |
| 150°   | 903.4  | 909.0  | 912.6  | 915.5  | 912.6  |
| 152.5° | 931.9  | 937.5  | 942.1  | 945.7  | 942.1  |
| 155°   | 960.4  | 963.1  | 966.0  | 970.7  | 967.7  |
| 157.5° | 985.2  | 987.0  | 988.7  | 995.3  | 990.7  |
| 160°   | 1007.1 | 1009.1 | 1010.0 | 1015.6 | 1011.7 |
| 162.5° | 1027.4 | 1027.4 | 1028.5 | 1034.7 | 1030.1 |
| 165°   | 1044.9 | 1043.9 | 1043.9 | 1050.4 | 1045.9 |
| 167.5° | 1060.7 | 1057.6 | 1057.6 | 1064.3 | 1059.6 |
| 170°   | 1072.5 | 1069.8 | 1068.8 | 1075.4 | 1069.8 |
| 172.5° | 1080.6 | 1078.1 | 1077.0 | 1083.7 | 1078.1 |
| 175°   | 1087.3 | 1084.6 | 1082.6 | 1089.2 | 1083.7 |
| 177.5° | 1090.9 | 1088.2 | 1086.2 | 1091.8 | 1086.2 |
| 180°   | 1089.2 | 1089.2 | 1089.2 | 1089.2 | 1089.2 |



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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 | 8.97             | 9.86  | 9.90  | 10.81 | 12.03 | 8.52           | 9.41  | 9.46  | 10.36 | 11.59 |
|                 | 3H   | 10.63            | 11.42 | 11.57 | 12.38 | 13.63 | 10.14          | 10.93 | 11.08 | 11.89 | 13.14 |
|                 | 4H   | 11.21            | 11.97 | 12.17 | 12.93 | 14.19 | 10.72          | 11.47 | 11.68 | 12.43 | 13.70 |
|                 | 6H   | 11.61            | 12.30 | 12.58 | 13.27 | 14.55 | 11.11          | 11.80 | 12.08 | 12.77 | 14.05 |
|                 | 8H   | 11.71            | 12.37 | 12.69 | 13.36 | 14.63 | 11.21          | 11.87 | 12.19 | 12.86 | 14.13 |
|                 | 12H  | 11.76            | 12.39 | 12.74 | 13.37 | 14.67 | 11.25          | 11.88 | 12.23 | 12.86 | 14.16 |
| 4H              | 2H   | 9.43             | 10.18 | 10.39 | 11.14 | 12.41 | 9.07           | 9.83  | 10.04 | 10.79 | 12.05 |
|                 | 3H   | 11.29            | 11.92 | 12.26 | 12.91 | 14.19 | 10.88          | 11.51 | 11.86 | 12.51 | 13.78 |
|                 | 4H   | 12.00            | 12.58 | 12.99 | 13.56 | 14.86 | 11.58          | 12.15 | 12.56 | 13.14 | 14.44 |
|                 | 6H   | 12.51            | 13.01 | 13.51 | 14.02 | 15.32 | 12.08          | 12.58 | 13.08 | 13.59 | 14.89 |
|                 | 8H   | 12.66            | 13.13 | 13.66 | 14.13 | 15.44 | 12.23          | 12.69 | 13.22 | 13.69 | 15.01 |
|                 | 12H  | 12.74            | 13.15 | 13.75 | 14.17 | 15.49 | 12.29          | 12.70 | 13.30 | 13.72 | 15.04 |
| 8H              | 4H   | 12.20            | 12.66 | 13.19 | 13.66 | 14.98 | 11.82          | 12.28 | 12.82 | 13.29 | 14.60 |
|                 | 6H   | 12.82            | 13.21 | 13.84 | 14.25 | 15.56 | 12.44          | 12.82 | 13.46 | 13.87 | 15.18 |
|                 | 8H   | 13.04            | 13.38 | 14.07 | 14.41 | 15.74 | 12.65          | 12.99 | 13.68 | 14.02 | 15.35 |
|                 | 12H  | 13.17            | 13.47 | 14.20 | 14.49 | 15.87 | 12.76          | 13.06 | 13.79 | 14.08 | 15.46 |
| 12H             | 4H   | 12.18            | 12.60 | 13.20 | 13.62 | 14.94 | 11.81          | 12.23 | 12.83 | 13.25 | 14.57 |
|                 | 6H   | 12.85            | 13.19 | 13.88 | 14.22 | 15.55 | 12.48          | 12.82 | 13.51 | 13.85 | 15.18 |
|                 | 8H   | 13.09            | 13.39 | 14.12 | 14.41 | 15.79 | 12.71          | 13.01 | 13.74 | 14.03 | 15.41 |