

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: P916189

Luminaire Tested: DFN2DIP-HX3F0-040D040US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916189  
REPORT IS A COMBINATION OF REPORTS P900738 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-040D040US930-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

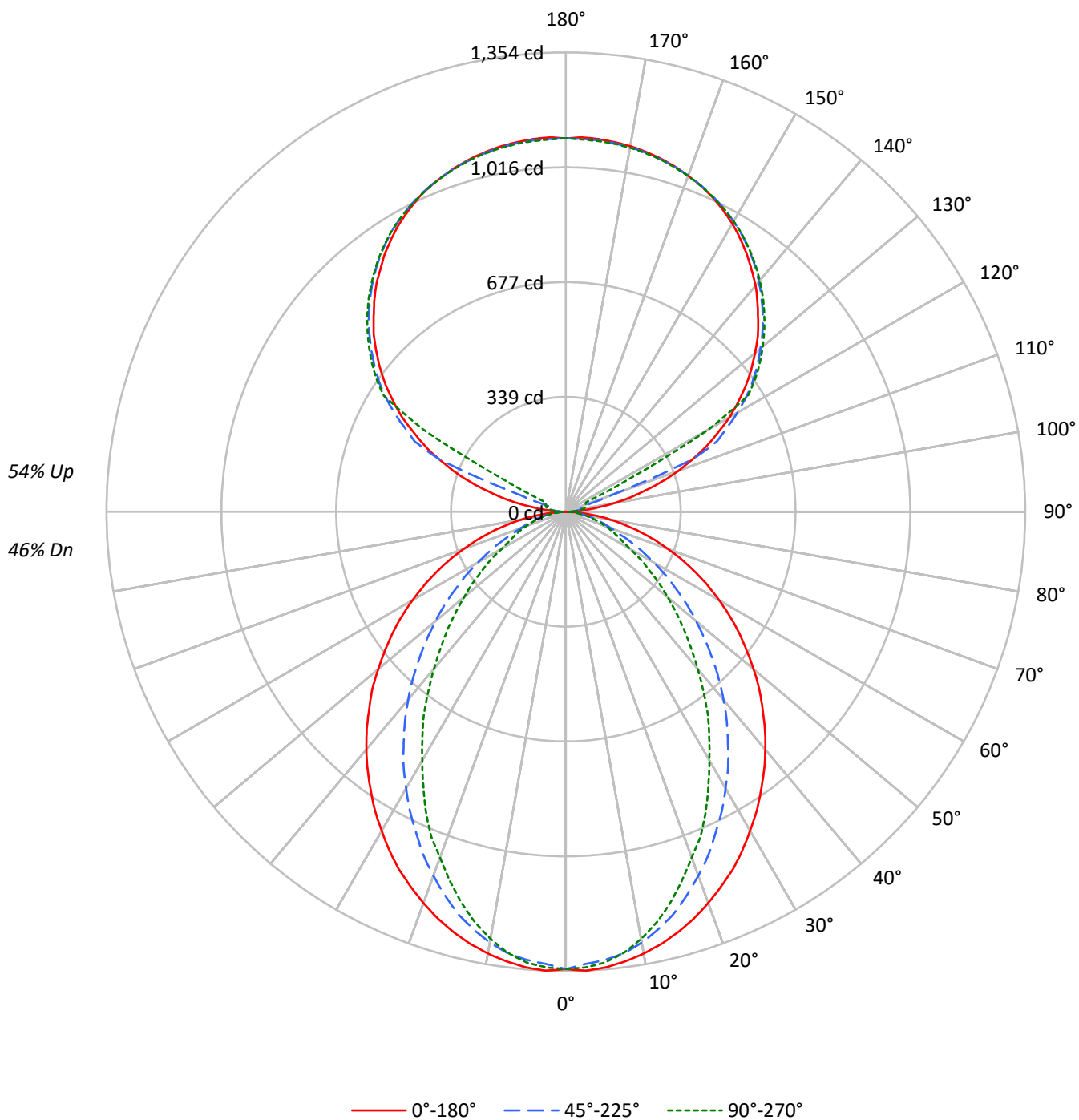
Lumens per Lamp: N/A  
Luminaire Lumens: 6000.6 lumens  
Efficiency: N/A  
Efficacy: 93.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 64.2  
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: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLLONL

**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 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1561 | 1561 | 1561 |
| 5°  | 1563 | 1535 | 1546 |
| 10° | 1547 | 1504 | 1494 |
| 15° | 1525 | 1453 | 1416 |
| 20° | 1496 | 1384 | 1320 |
| 25° | 1466 | 1306 | 1227 |
| 30° | 1427 | 1226 | 1110 |
| 35° | 1388 | 1141 | 1007 |
| 40° | 1349 | 1053 | 889  |
| 45° | 1303 | 955  | 782  |
| 50° | 1256 | 856  | 677  |
| 55° | 1206 | 751  | 577  |
| 60° | 1149 | 641  | 474  |
| 65° | 1083 | 529  | 426  |
| 70° | 1002 | 425  | 384  |
| 75° | 902  | 372  | 348  |
| 80° | 756  | 309  | 299  |
| 85° | 516  | 201  | 220  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1303 cd/sqm

TEST NUMBER: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 126.3  | 2.1       |
| 10°-20°   | 346.8  | 5.8       |
| 20°-30°   | 486.9  | 8.1       |
| 30°-40°   | 530.7  | 8.8       |
| 40°-50°   | 487.8  | 8.1       |
| 50°-60°   | 383.1  | 6.4       |
| 60°-70°   | 249.3  | 4.2       |
| 70°-80°   | 128.4  | 2.1       |
| 80°-90°   | 34.7   | 0.6       |
| 90°-100°  | 36.3   | 0.6       |
| 100°-110° | 135.3  | 2.3       |
| 110°-120° | 358.8  | 6.0       |
| 120°-130° | 595.1  | 9.9       |
| 130°-140° | 632.1  | 10.5      |
| 140°-150° | 587.5  | 9.8       |
| 150°-160° | 472.3  | 7.9       |
| 160°-170° | 304.4  | 5.1       |
| 170°-180° | 104.8  | 1.7       |
| 0°-30°    | 960.0  | 16.0      |
| 0°-40°    | 1490.7 | 24.8      |
| 0°-60°    | 2361.5 | 39.4      |
| 0°-90°    | 2774.0 | 46.2      |
| 90°-120°  | 530.4  | 8.8       |
| 90°-150°  | 2345.2 | 39.1      |
| 90°-180°  | 3227.0 | 53.8      |
| 0°-180°   | 6000.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1348 | 1348  | 1348 | 1348  | 1348 |      |
| 5°   | 1348 | 1342  | 1326 | 1337  | 1333 | 128  |
| 15°  | 1282 | 1268  | 1227 | 1204  | 1192 | 361  |
| 25°  | 1164 | 1125  | 1044 | 994   | 976  | 535  |
| 35°  | 1003 | 940   | 833  | 756   | 729  | 628  |
| 45°  | 820  | 738   | 610  | 523   | 494  | 633  |
| 55°  | 623  | 528   | 396  | 323   | 300  | 557  |
| 65°  | 421  | 322   | 212  | 171   | 167  | 417  |
| 75°  | 224  | 139   | 98   | 89    | 88   | 237  |
| 85°  | 52   | 27    | 23   | 23    | 23   | 60   |
| 90°  | 1    | 10    | 16   | 20    | 21   | 6    |
| 95°  | 52   | 25    | 31   | 35    | 34   | 61   |
| 105° | 242  | 266   | 49   | 57    | 60   | 259  |
| 115° | 458  | 471   | 491  | 123   | 65   | 451  |
| 125° | 647  | 658   | 673  | 679   | 681  | 577  |
| 135° | 801  | 814   | 821  | 829   | 828  | 619  |
| 145° | 929  | 929   | 942  | 948   | 944  | 581  |
| 155° | 1023 | 1016  | 1026 | 1030  | 1024 | 472  |
| 165° | 1078 | 1074  | 1076 | 1082  | 1076 | 305  |
| 175° | 1103 | 1097  | 1099 | 1105  | 1097 | 105  |
| 180° | 1101 | 1101  | 1101 | 1101  | 1101 |      |

TEST NUMBER: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1347.9 | 1347.9 | 1347.9 | 1347.9 | 1347.9 |
| 2.5°   | 1354.0 | 1347.9 | 1334.4 | 1346.7 | 1344.2 |
| 5°     | 1347.9 | 1341.7 | 1325.8 | 1336.8 | 1333.3 |
| 7.5°   | 1336.8 | 1329.6 | 1312.5 | 1317.3 | 1311.2 |
| 10°    | 1322.3 | 1313.7 | 1289.3 | 1285.6 | 1278.4 |
| 12.5°  | 1304.0 | 1293.0 | 1260.0 | 1252.7 | 1239.3 |
| 15°    | 1282.0 | 1268.5 | 1227.1 | 1204.0 | 1191.8 |
| 17.5°  | 1256.4 | 1236.8 | 1185.5 | 1158.8 | 1139.2 |
| 20°    | 1227.1 | 1202.6 | 1141.7 | 1111.3 | 1084.3 |
| 22.5°  | 1195.4 | 1167.3 | 1096.5 | 1055.1 | 1036.9 |
| 25°    | 1163.7 | 1124.6 | 1044.1 | 994.2  | 975.7  |
| 27.5°  | 1125.9 | 1084.3 | 995.3  | 938.0  | 909.9  |
| 30°    | 1085.7 | 1039.2 | 941.6  | 879.5  | 846.5  |
| 32.5°  | 1046.6 | 990.4  | 890.5  | 817.3  | 786.7  |
| 35°    | 1002.7 | 940.4  | 833.2  | 756.3  | 729.4  |
| 37.5°  | 960.0  | 892.8  | 779.4  | 695.2  | 664.8  |
| 40°    | 914.8  | 841.7  | 723.3  | 636.7  | 605.0  |
| 42.5°  | 868.5  | 790.4  | 667.2  | 576.9  | 546.5  |
| 45°    | 819.7  | 737.9  | 609.9  | 523.3  | 494.0  |
| 47.5°  | 773.4  | 686.8  | 555.1  | 468.4  | 441.6  |
| 50°    | 722.1  | 635.5  | 501.3  | 417.1  | 391.6  |
| 52.5°  | 672.1  | 580.6  | 450.1  | 369.6  | 346.4  |
| 55°    | 623.3  | 528.2  | 396.4  | 323.3  | 300.1  |
| 57.5°  | 573.3  | 475.7  | 348.9  | 280.5  | 261.1  |
| 60°    | 522.0  | 424.4  | 298.8  | 236.7  | 217.2  |
| 62.5°  | 472.1  | 374.5  | 256.1  | 197.6  | 187.9  |
| 65°    | 420.9  | 322.0  | 212.2  | 170.8  | 167.1  |
| 67.5°  | 372.1  | 273.2  | 170.8  | 150.0  | 146.3  |
| 70°    | 320.8  | 225.7  | 141.5  | 129.3  | 124.3  |
| 72.5°  | 272.1  | 181.7  | 118.3  | 108.6  | 106.2  |
| 75°    | 224.4  | 139.0  | 97.6   | 89.0   | 87.9   |
| 77.5°  | 176.9  | 98.7   | 76.9   | 72.0   | 69.5   |
| 80°    | 132.9  | 70.8   | 58.5   | 53.7   | 53.7   |
| 82.5°  | 92.7   | 47.6   | 40.3   | 37.7   | 37.7   |
| 85°    | 52.4   | 26.8   | 23.2   | 23.2   | 23.2   |
| 87.5°  | 19.6   | 9.7    | 9.7    | 8.6    | 8.6    |
| 90°    | 0.7    | 9.5    | 15.9   | 20.0   | 21.4   |
| 92.5°  | 20.0   | 16.7   | 19.1   | 20.7   | 21.4   |
| 95°    | 51.7   | 25.4   | 31.0   | 35.1   | 34.2   |
| 97.5°  | 93.2   | 27.9   | 40.6   | 43.0   | 43.8   |
| 100°   | 141.0  | 31.9   | 45.4   | 51.7   | 53.3   |
| 102.5° | 193.5  | 192.0  | 47.0   | 55.7   | 58.1   |
| 105°   | 242.1  | 266.0  | 48.6   | 57.3   | 60.5   |
| 107.5° | 298.6  | 318.5  | 50.2   | 58.9   | 62.1   |
| 110°   | 352.9  | 369.5  | 139.4  | 59.8   | 62.9   |



TEST NUMBER: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 403.8  | 418.1  | 404.6  | 61.3   | 63.8   |
| 115°   | 457.9  | 471.4  | 491.4  | 122.6  | 65.4   |
| 117.5° | 504.9  | 520.8  | 534.4  | 420.4  | 211.8  |
| 120°   | 557.5  | 569.4  | 583.8  | 593.4  | 485.8  |
| 122.5° | 602.0  | 614.8  | 630.8  | 635.5  | 636.3  |
| 125°   | 647.4  | 657.9  | 672.9  | 678.6  | 680.9  |
| 127.5° | 688.8  | 700.0  | 712.0  | 720.0  | 720.7  |
| 130°   | 727.9  | 740.7  | 749.3  | 758.1  | 757.4  |
| 132.5° | 767.7  | 778.1  | 786.8  | 794.0  | 793.3  |
| 135°   | 801.2  | 814.0  | 821.1  | 829.1  | 827.5  |
| 137.5° | 836.2  | 845.7  | 853.8  | 861.7  | 859.3  |
| 140°   | 870.4  | 876.9  | 885.6  | 892.8  | 888.8  |
| 142.5° | 899.2  | 904.7  | 915.1  | 921.4  | 917.5  |
| 145°   | 929.4  | 928.6  | 942.1  | 947.7  | 943.7  |
| 147.5° | 955.6  | 953.2  | 966.8  | 970.8  | 967.7  |
| 150°   | 981.1  | 975.6  | 988.4  | 993.1  | 989.1  |
| 152.5° | 1002.7 | 996.3  | 1008.2 | 1013.0 | 1007.5 |
| 155°   | 1023.4 | 1016.3 | 1025.8 | 1030.5 | 1024.2 |
| 157.5° | 1040.1 | 1033.7 | 1041.0 | 1046.5 | 1040.1 |
| 160°   | 1054.4 | 1049.6 | 1054.4 | 1059.2 | 1053.6 |
| 162.5° | 1067.1 | 1062.4 | 1066.4 | 1072.0 | 1064.8 |
| 165°   | 1078.3 | 1073.6 | 1075.9 | 1081.5 | 1075.9 |
| 167.5° | 1087.1 | 1082.2 | 1084.8 | 1090.3 | 1083.1 |
| 170°   | 1094.3 | 1089.5 | 1091.0 | 1096.7 | 1089.5 |
| 172.5° | 1099.0 | 1094.3 | 1095.9 | 1101.5 | 1094.3 |
| 175°   | 1102.9 | 1097.4 | 1099.0 | 1104.6 | 1096.7 |
| 177.5° | 1104.6 | 1099.0 | 1099.8 | 1105.5 | 1098.3 |
| 180°   | 1100.7 | 1100.7 | 1100.7 | 1100.7 | 1100.7 |

TEST NUMBER: P916189

CATALOG NUMBER: DFN2DIP-HX3F0-040D040US930-RLONL

**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 | 8.29             | 9.09  | 9.28  | 10.09 | 11.42 | 4.26           | 5.06 | 5.26 | 6.07 | 7.39  |
|                 | 3H   | 9.96             | 10.67 | 10.96 | 11.68 | 13.03 | 5.45           | 6.16 | 6.45 | 7.17 | 8.52  |
|                 | 4H   | 10.56            | 11.23 | 11.58 | 12.25 | 13.60 | 5.89           | 6.57 | 6.91 | 7.58 | 8.94  |
|                 | 6H   | 10.97            | 11.59 | 12.00 | 12.61 | 13.98 | 6.21           | 6.83 | 7.24 | 7.85 | 9.22  |
|                 | 8H   | 11.09            | 11.69 | 12.13 | 12.72 | 14.08 | 6.29           | 6.89 | 7.33 | 7.92 | 9.29  |
|                 | 12H  | 11.15            | 11.71 | 12.19 | 12.74 | 14.13 | 6.34           | 6.90 | 7.37 | 7.93 | 9.31  |
| 4H              | 2H   | 8.30             | 8.98  | 9.33  | 9.99  | 11.35 | 4.85           | 5.53 | 5.88 | 6.54 | 7.90  |
|                 | 3H   | 10.12            | 10.68 | 11.15 | 11.73 | 13.09 | 6.19           | 6.76 | 7.23 | 7.80 | 9.17  |
|                 | 4H   | 10.80            | 11.32 | 11.84 | 12.35 | 13.75 | 6.74           | 7.25 | 7.78 | 8.29 | 9.68  |
|                 | 6H   | 11.31            | 11.75 | 12.36 | 12.81 | 14.20 | 7.15           | 7.59 | 8.20 | 8.65 | 10.04 |
|                 | 8H   | 11.48            | 11.89 | 12.53 | 12.94 | 14.35 | 7.27           | 7.69 | 8.33 | 8.74 | 10.14 |
|                 | 12H  | 11.57            | 11.94 | 12.64 | 13.01 | 14.41 | 7.34           | 7.71 | 8.40 | 8.77 | 10.18 |
| 8H              | 4H   | 10.77            | 11.18 | 11.82 | 12.23 | 13.63 | 7.01           | 7.42 | 8.06 | 8.47 | 9.88  |
|                 | 6H   | 11.33            | 11.67 | 12.40 | 12.76 | 14.16 | 7.52           | 7.86 | 8.60 | 8.95 | 10.35 |
|                 | 8H   | 11.54            | 11.84 | 12.62 | 12.91 | 14.33 | 7.71           | 8.01 | 8.79 | 9.08 | 10.50 |
|                 | 12H  | 11.67            | 11.93 | 12.75 | 13.00 | 14.46 | 7.82           | 8.08 | 8.91 | 9.16 | 10.62 |
| 12H             | 4H   | 10.72            | 11.09 | 11.79 | 12.16 | 13.56 | 7.01           | 7.38 | 8.08 | 8.45 | 9.86  |
|                 | 6H   | 11.30            | 11.60 | 12.38 | 12.68 | 14.10 | 7.57           | 7.87 | 8.65 | 8.94 | 10.36 |
|                 | 8H   | 11.51            | 11.78 | 12.60 | 12.85 | 14.31 | 7.77           | 8.04 | 8.86 | 9.11 | 10.57 |