

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: P924346

Luminaire Tested: DFN2DIP-HX3F0-030D040US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924346  
REPORT IS A COMBINATION OF REPORTS P899215 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-030D040US950-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

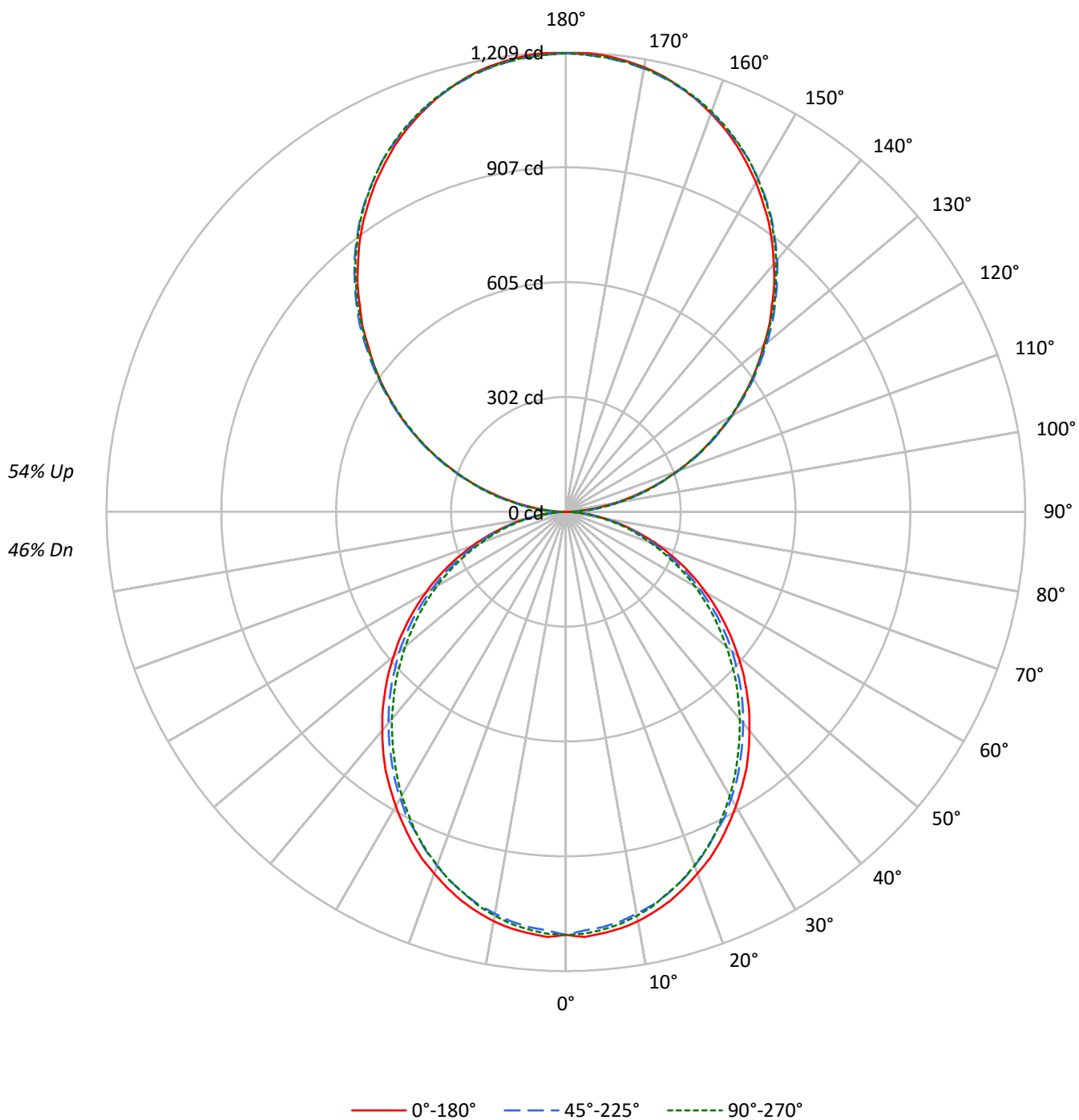
Lumens per Lamp: N/A  
Luminaire Lumens: 6210.5 lumens  
Efficiency: N/A  
Efficacy: 116.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 53.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-FLLFL

**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 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 69 | 66 | 58 | 56 | 55 | 46 | 45 | 44 |
| 2   | 88  | 81  | 75  | 70  | 81 | 74 | 69 | 65 | 62 | 58 | 55 | 51 | 48 | 46 | 41 | 39 | 37 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 55 | 50 | 46 | 45 | 42 | 39 | 36 | 34 | 32 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 43 | 39 | 40 | 36 | 33 | 32 | 29 | 27 |
| 5   | 67  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 34 | 30 | 33 | 28 | 25 | 26 | 23 | 21 |
| 7   | 57  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 25 | 22 | 24 | 21 | 19 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 37  | 30  | 25  | 45 | 35 | 28 | 24 | 30 | 24 | 21 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1290 | 1290 | 1290 |
| 5°  | 1291 | 1271 | 1280 |
| 10° | 1280 | 1253 | 1262 |
| 15° | 1261 | 1232 | 1234 |
| 20° | 1235 | 1202 | 1206 |
| 25° | 1209 | 1167 | 1173 |
| 30° | 1177 | 1134 | 1131 |
| 35° | 1146 | 1095 | 1088 |
| 40° | 1108 | 1057 | 1046 |
| 45° | 1071 | 1017 | 1003 |
| 50° | 1030 | 976  | 954  |
| 55° | 987  | 929  | 908  |
| 60° | 938  | 873  | 856  |
| 65° | 884  | 814  | 794  |
| 70° | 816  | 743  | 727  |
| 75° | 722  | 657  | 665  |
| 80° | 609  | 548  | 548  |
| 85° | 433  | 363  | 355  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1134 cd/sqm

TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 104.8  | 1.7       |
| 10°-20°   | 294.9  | 4.7       |
| 20°-30°   | 433.4  | 7.0       |
| 30°-40°   | 503.4  | 8.1       |
| 40°-50°   | 502.7  | 8.1       |
| 50°-60°   | 438.4  | 7.1       |
| 60°-70°   | 324.1  | 5.2       |
| 70°-80°   | 183.3  | 3.0       |
| 80°-90°   | 51.8   | 0.8       |
| 90°-100°  | 74.7   | 1.2       |
| 100°-110° | 237.3  | 3.8       |
| 110°-120° | 406.1  | 6.5       |
| 120°-130° | 534.0  | 8.6       |
| 130°-140° | 599.4  | 9.7       |
| 140°-150° | 587.8  | 9.5       |
| 150°-160° | 493.1  | 7.9       |
| 160°-170° | 327.0  | 5.3       |
| 170°-180° | 114.3  | 1.8       |
| 0°-30°    | 833.1  | 13.4      |
| 0°-40°    | 1336.5 | 21.5      |
| 0°-60°    | 2277.6 | 36.7      |
| 0°-90°    | 2836.8 | 45.7      |
| 90°-120°  | 718.0  | 11.6      |
| 90°-150°  | 2439.3 | 39.3      |
| 90°-180°  | 3374.0 | 54.3      |
| 0°-180°   | 6210.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1114 | 1114  | 1114 | 1114  | 1114 |      |
| 5°   | 1114 | 1109  | 1098 | 1106  | 1104 | 106  |
| 15°  | 1060 | 1054  | 1040 | 1044  | 1039 | 299  |
| 25°  | 959  | 951   | 933  | 935   | 933  | 441  |
| 35°  | 828  | 817   | 800  | 793   | 788  | 517  |
| 45°  | 674  | 666   | 650  | 638   | 634  | 520  |
| 55°  | 510  | 503   | 490  | 478   | 472  | 456  |
| 65°  | 344  | 337   | 327  | 317   | 312  | 340  |
| 75°  | 180  | 178   | 172  | 166   | 168  | 192  |
| 85°  | 44   | 43    | 42   | 38    | 38   | 49   |
| 90°  | 1    | 13    | 36   | 34    | 34   | 6    |
| 95°  | 53   | 63    | 65   | 65    | 63   | 59   |
| 105° | 219  | 222   | 224  | 226   | 226  | 231  |
| 115° | 408  | 413   | 412  | 410   | 408  | 403  |
| 125° | 593  | 602   | 599  | 596   | 594  | 530  |
| 135° | 767  | 778   | 780  | 779   | 776  | 593  |
| 145° | 931  | 938   | 944  | 945   | 941  | 582  |
| 155° | 1064 | 1067  | 1070 | 1076  | 1072 | 490  |
| 165° | 1158 | 1157  | 1157 | 1164  | 1159 | 327  |
| 175° | 1205 | 1202  | 1200 | 1207  | 1201 | 114  |
| 180° | 1207 | 1207  | 1207 | 1207  | 1207 |      |

TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1113.6 | 1113.6 | 1113.6 | 1113.6 | 1113.6 |
| 2.5°   | 1120.1 | 1114.7 | 1102.9 | 1113.6 | 1111.6 |
| 5°     | 1113.6 | 1109.4 | 1097.6 | 1106.2 | 1104.1 |
| 7.5°   | 1106.2 | 1099.8 | 1087.9 | 1096.6 | 1094.4 |
| 10°    | 1094.4 | 1086.9 | 1074.1 | 1082.6 | 1079.5 |
| 12.5°  | 1078.3 | 1071.9 | 1059.1 | 1064.4 | 1062.3 |
| 15°    | 1060.1 | 1053.8 | 1039.8 | 1044.1 | 1038.7 |
| 17.5°  | 1037.6 | 1031.3 | 1017.3 | 1022.6 | 1017.3 |
| 20°    | 1013.0 | 1006.6 | 991.6  | 994.7  | 990.5  |
| 22.5°  | 988.4  | 978.8  | 964.8  | 964.8  | 962.6  |
| 25°    | 959.4  | 950.9  | 932.7  | 934.8  | 932.7  |
| 27.5°  | 927.3  | 919.8  | 905.9  | 902.8  | 897.4  |
| 30°    | 895.2  | 886.6  | 870.6  | 867.4  | 863.1  |
| 32.5°  | 861.0  | 854.6  | 837.4  | 830.9  | 826.6  |
| 35°    | 827.8  | 817.1  | 799.9  | 793.4  | 788.1  |
| 37.5°  | 790.3  | 780.7  | 763.5  | 755.9  | 750.6  |
| 40°    | 751.8  | 743.2  | 726.0  | 716.5  | 712.2  |
| 42.5°  | 714.3  | 705.7  | 688.6  | 677.8  | 671.4  |
| 45°    | 673.6  | 666.1  | 650.0  | 638.2  | 633.9  |
| 47.5°  | 633.9  | 626.5  | 609.3  | 597.5  | 591.1  |
| 50°    | 592.1  | 586.8  | 571.8  | 556.8  | 551.5  |
| 52.5°  | 551.5  | 544.0  | 530.1  | 518.3  | 510.8  |
| 55°    | 509.8  | 503.3  | 490.5  | 477.7  | 472.3  |
| 57.5°  | 467.9  | 462.6  | 448.7  | 435.8  | 431.5  |
| 60°    | 426.2  | 422.0  | 407.0  | 395.1  | 392.0  |
| 62.5°  | 385.5  | 378.0  | 367.3  | 356.6  | 352.3  |
| 65°    | 343.8  | 337.3  | 326.6  | 317.0  | 311.7  |
| 67.5°  | 301.0  | 295.5  | 285.9  | 278.5  | 274.2  |
| 70°    | 261.3  | 257.0  | 247.4  | 239.8  | 235.6  |
| 72.5°  | 220.7  | 216.3  | 210.9  | 203.5  | 200.3  |
| 75°    | 179.8  | 177.8  | 172.4  | 166.0  | 168.2  |
| 77.5°  | 143.5  | 139.2  | 137.0  | 133.8  | 130.7  |
| 80°    | 107.1  | 106.0  | 103.8  | 100.6  | 98.5   |
| 82.5°  | 72.8   | 72.8   | 71.8   | 67.4   | 67.4   |
| 85°    | 43.9   | 42.8   | 41.8   | 38.5   | 37.5   |
| 87.5°  | 19.3   | 17.2   | 15.0   | 11.8   | 10.7   |
| 90°    | 1.0    | 13.1   | 35.7   | 33.5   | 34.5   |
| 92.5°  | 22.5   | 30.5   | 31.7   | 32.7   | 32.7   |
| 95°    | 53.1   | 63.3   | 65.2   | 65.2   | 63.3   |
| 97.5°  | 88.4   | 97.9   | 101.9  | 101.9  | 101.9  |
| 100°   | 129.2  | 137.6  | 140.4  | 140.4  | 139.4  |
| 102.5° | 172.1  | 178.3  | 182.3  | 183.4  | 182.3  |
| 105°   | 219.0  | 221.9  | 224.1  | 225.9  | 225.9  |
| 107.5° | 265.6  | 270.0  | 270.0  | 270.6  | 265.6  |
| 110°   | 310.7  | 316.5  | 316.5  | 316.5  | 313.7  |

TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 359.5  | 365.7  | 364.5  | 361.7  | 359.5  |
| 115°   | 407.5  | 413.4  | 411.5  | 410.4  | 407.5  |
| 117.5° | 455.2  | 463.2  | 458.1  | 455.2  | 452.3  |
| 120°   | 503.2  | 511.2  | 503.2  | 503.2  | 499.9  |
| 122.5° | 546.8  | 557.0  | 552.0  | 549.0  | 546.8  |
| 125°   | 592.7  | 601.8  | 598.9  | 595.6  | 594.5  |
| 127.5° | 637.5  | 648.7  | 644.7  | 640.3  | 637.5  |
| 130°   | 679.2  | 692.4  | 690.6  | 688.4  | 684.4  |
| 132.5° | 726.2  | 736.4  | 737.2  | 732.0  | 729.1  |
| 135°   | 766.6  | 777.9  | 780.1  | 778.9  | 776.1  |
| 137.5° | 811.8  | 820.8  | 822.6  | 821.9  | 817.6  |
| 140°   | 851.3  | 860.5  | 865.6  | 865.6  | 861.6  |
| 142.5° | 892.2  | 901.2  | 904.1  | 905.3  | 901.2  |
| 145°   | 930.7  | 938.0  | 943.8  | 944.9  | 940.9  |
| 147.5° | 965.3  | 974.3  | 978.7  | 980.5  | 976.5  |
| 150°   | 1000.9 | 1007.1 | 1011.1 | 1014.4 | 1011.1 |
| 152.5° | 1032.6 | 1038.7 | 1043.9 | 1047.9 | 1043.9 |
| 155°   | 1064.2 | 1067.1 | 1070.4 | 1075.5 | 1072.2 |
| 157.5° | 1091.6 | 1093.7 | 1095.5 | 1102.8 | 1097.7 |
| 160°   | 1115.9 | 1118.1 | 1119.1 | 1125.3 | 1121.0 |
| 162.5° | 1138.4 | 1138.4 | 1139.6 | 1146.4 | 1141.4 |
| 165°   | 1157.8 | 1156.6 | 1156.6 | 1163.9 | 1158.8 |
| 167.5° | 1175.2 | 1171.9 | 1171.9 | 1179.2 | 1174.1 |
| 170°   | 1188.3 | 1185.3 | 1184.3 | 1191.5 | 1185.3 |
| 172.5° | 1197.4 | 1194.5 | 1193.4 | 1200.7 | 1194.5 |
| 175°   | 1204.7 | 1201.8 | 1199.6 | 1206.8 | 1200.7 |
| 177.5° | 1208.7 | 1205.8 | 1203.6 | 1209.8 | 1203.6 |
| 180°   | 1206.8 | 1206.8 | 1206.8 | 1206.8 | 1206.8 |

TEST NUMBER: P924346

CATALOG NUMBER: DFN2DIP-HX3F0-030D040US950-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 | 7.70             | 8.52  | 8.69  | 9.53  | 10.86 | 7.27           | 8.09  | 8.26  | 9.10  | 10.43 |
|                 | 3H   | 9.35             | 10.09 | 10.35 | 11.10 | 12.45 | 8.88           | 9.62  | 9.88  | 10.63 | 11.98 |
|                 | 4H   | 9.93             | 10.63 | 10.94 | 11.64 | 13.01 | 9.46           | 10.16 | 10.48 | 11.18 | 12.54 |
|                 | 6H   | 10.32            | 10.96 | 11.35 | 11.99 | 13.36 | 9.85           | 10.49 | 10.88 | 11.52 | 12.89 |
|                 | 8H   | 10.42            | 11.03 | 11.45 | 12.07 | 13.44 | 9.95           | 10.56 | 10.98 | 11.60 | 12.97 |
|                 | 12H  | 10.46            | 11.05 | 11.50 | 12.08 | 13.47 | 9.99           | 10.57 | 11.03 | 11.61 | 13.00 |
| 4H              | 2H   | 8.15             | 8.85  | 9.17  | 9.87  | 11.23 | 7.81           | 8.51  | 8.83  | 9.53  | 10.89 |
|                 | 3H   | 10.01            | 10.59 | 11.04 | 11.63 | 13.01 | 9.62           | 10.20 | 10.65 | 11.25 | 12.62 |
|                 | 4H   | 10.71            | 11.25 | 11.75 | 12.28 | 13.68 | 10.31          | 10.85 | 11.35 | 11.88 | 13.28 |
|                 | 6H   | 11.22            | 11.68 | 12.27 | 12.74 | 14.13 | 10.81          | 11.27 | 11.86 | 12.33 | 13.73 |
|                 | 8H   | 11.36            | 11.79 | 12.41 | 12.85 | 14.25 | 10.96          | 11.38 | 12.01 | 12.44 | 13.85 |
|                 | 12H  | 11.43            | 11.82 | 12.50 | 12.89 | 14.30 | 11.01          | 11.40 | 12.08 | 12.47 | 13.88 |
| 8H              | 4H   | 10.90            | 11.33 | 11.95 | 12.39 | 13.79 | 10.55          | 10.97 | 11.59 | 12.03 | 13.44 |
|                 | 6H   | 11.52            | 11.88 | 12.60 | 12.97 | 14.38 | 11.16          | 11.52 | 12.24 | 12.61 | 14.02 |
|                 | 8H   | 11.74            | 12.05 | 12.82 | 13.13 | 14.55 | 11.37          | 11.69 | 12.45 | 12.76 | 14.19 |
|                 | 12H  | 11.86            | 12.14 | 12.95 | 13.21 | 14.68 | 11.48          | 11.76 | 12.57 | 12.83 | 14.30 |
| 12H             | 4H   | 10.89            | 11.27 | 11.95 | 12.34 | 13.75 | 10.54          | 10.92 | 11.60 | 11.99 | 13.41 |
|                 | 6H   | 11.55            | 11.86 | 12.63 | 12.94 | 14.37 | 11.20          | 11.52 | 12.28 | 12.59 | 14.02 |
|                 | 8H   | 11.79            | 12.06 | 12.87 | 13.13 | 14.60 | 11.43          | 11.71 | 12.52 | 12.78 | 14.25 |