

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: P907900

Luminaire Tested: DFN2DIP-HX2F0-030D030US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

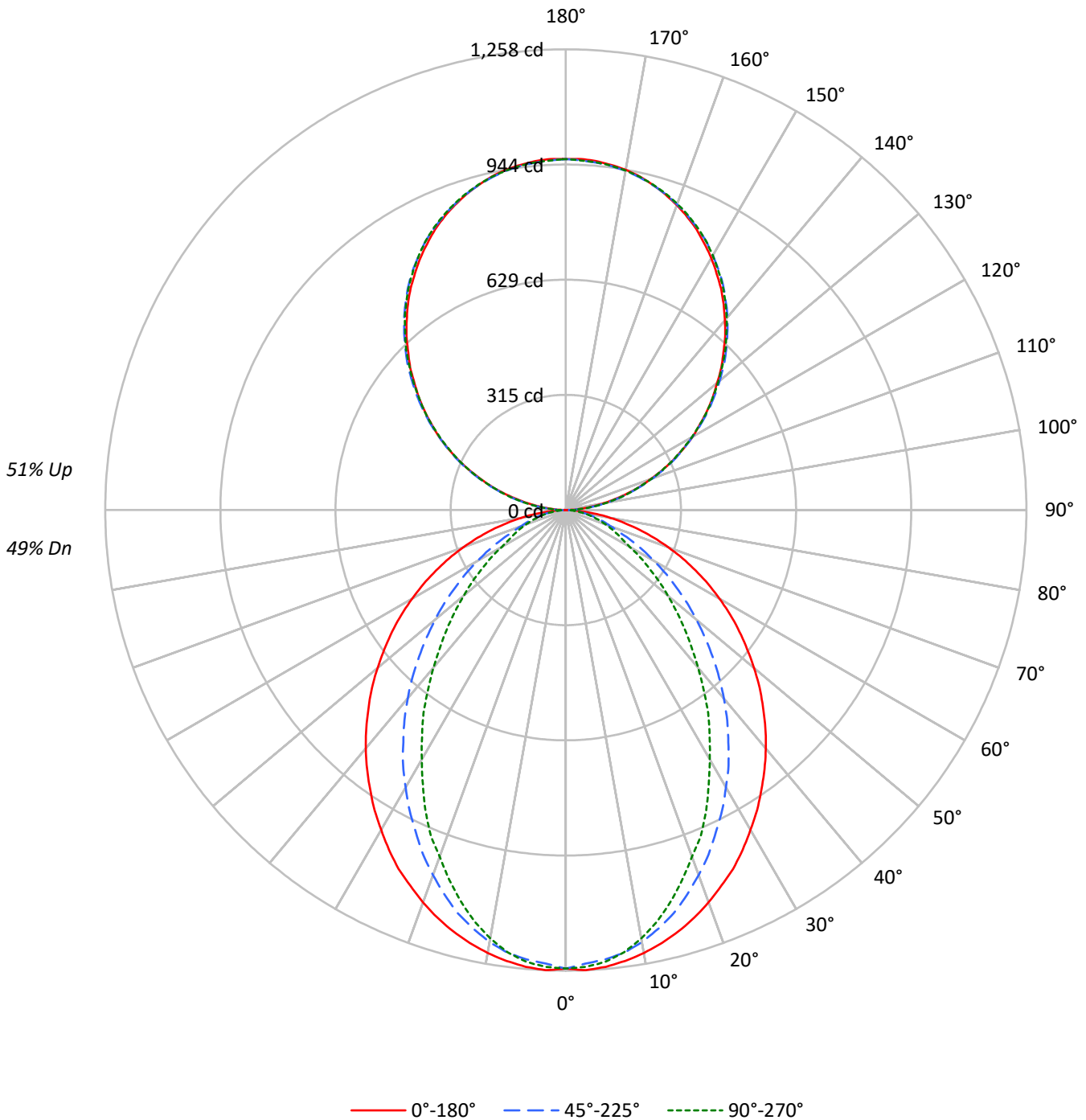
Test Method: LM-79-2019  
Report Number: P907900  
REPORT IS A COMBINATION OF REPORTS P899164 AND P896039  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-030D030US840-RLLFLL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5256.3 lumens  
Efficiency: N/A  
Efficacy: 111.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 47  
Input Voltage (V):  
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: P907900  
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### Luminous Intensity Polar Plot





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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 | 49 |    |    | 49 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 | 42 |    |    | 42 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 | 36 |    |    | 36 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 | 31 |    |    | 31 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 | 27 |    |    | 27 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 | 24 |    |    | 24 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 | 21 |    |    | 21 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 | 19 |    |    | 19 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 | 17 |    |    | 17 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 | 16 |    |    | 16 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 | 14 |    |    | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2950 | 2950 | 2950 |
| 5°  | 2950 | 2896 | 2916 |
| 10° | 2916 | 2833 | 2816 |
| 15° | 2871 | 2732 | 2665 |
| 20° | 2814 | 2597 | 2480 |
| 25° | 2755 | 2446 | 2303 |
| 30° | 2677 | 2292 | 2079 |
| 35° | 2600 | 2127 | 1883 |
| 40° | 2522 | 1958 | 1659 |
| 45° | 2432 | 1771 | 1456 |
| 50° | 2338 | 1582 | 1258 |
| 55° | 2239 | 1382 | 1069 |
| 60° | 2125 | 1173 | 875  |
| 65° | 1993 | 962  | 781  |
| 70° | 1834 | 766  | 699  |
| 75° | 1632 | 662  | 625  |
| 80° | 1344 | 535  | 527  |
| 85° | 879  | 331  | 369  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2432 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 117.4  | 2.2       |
| 10°-20°   | 322.1  | 6.1       |
| 20°-30°   | 452.3  | 8.6       |
| 30°-40°   | 493.0  | 9.4       |
| 40°-50°   | 453.1  | 8.6       |
| 50°-60°   | 355.9  | 6.8       |
| 60°-70°   | 231.6  | 4.4       |
| 70°-80°   | 119.2  | 2.3       |
| 80°-90°   | 33.2   | 0.6       |
| 90°-100°  | 59.3   | 1.1       |
| 100°-110° | 188.4  | 3.6       |
| 110°-120° | 322.4  | 6.1       |
| 120°-130° | 424.0  | 8.1       |
| 130°-140° | 475.9  | 9.1       |
| 140°-150° | 466.7  | 8.9       |
| 150°-160° | 391.5  | 7.4       |
| 160°-170° | 259.6  | 4.9       |
| 170°-180° | 90.7   | 1.7       |
| 0°-30°    | 891.8  | 17.0      |
| 0°-40°    | 1384.8 | 26.3      |
| 0°-60°    | 2193.8 | 41.7      |
| 0°-90°    | 2577.8 | 49.0      |
| 90°-120°  | 570.1  | 10.8      |
| 90°-150°  | 1936.6 | 36.8      |
| 90°-180°  | 2678.0 | 50.9      |
| 0°-180°   | 5256.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1252 | 1252  | 1252 | 1252  | 1252 |      |
| 5°   | 1252 | 1246  | 1232 | 1242  | 1238 | 119  |
| 15°  | 1191 | 1178  | 1140 | 1118  | 1107 | 336  |
| 25°  | 1081 | 1045  | 970  | 924   | 906  | 497  |
| 35°  | 932  | 874   | 774  | 703   | 678  | 583  |
| 45°  | 762  | 686   | 567  | 486   | 459  | 588  |
| 55°  | 579  | 491   | 368  | 300   | 279  | 517  |
| 65°  | 391  | 299   | 197  | 159   | 155  | 388  |
| 75°  | 208  | 129   | 91   | 83    | 82   | 220  |
| 85°  | 49   | 25    | 22   | 22    | 22   | 56   |
| 90°  | 1    | 10    | 28   | 27    | 28   | 5    |
| 95°  | 42   | 50    | 52   | 52    | 50   | 47   |
| 105° | 174  | 176   | 178  | 179   | 179  | 184  |
| 115° | 324  | 328   | 327  | 326   | 324  | 320  |
| 125° | 471  | 478   | 475  | 473   | 472  | 420  |
| 135° | 609  | 618   | 619  | 618   | 616  | 470  |
| 145° | 739  | 745   | 749  | 750   | 747  | 462  |
| 155° | 845  | 847   | 850  | 854   | 851  | 389  |
| 165° | 919  | 918   | 918  | 924   | 920  | 259  |
| 175° | 956  | 954   | 952  | 958   | 953  | 91   |
| 180° | 958  | 958   | 958  | 958   | 958  |      |



TEST NUMBER: P907900

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1252.1 | 1252.1 | 1252.1 | 1252.1 | 1252.1 |
| 2.5°   | 1257.8 | 1252.1 | 1239.6 | 1251.0 | 1248.8 |
| 5°     | 1252.1 | 1246.5 | 1231.7 | 1241.9 | 1238.5 |
| 7.5°   | 1241.9 | 1235.2 | 1219.3 | 1223.8 | 1218.1 |
| 10°    | 1228.3 | 1220.4 | 1197.8 | 1194.3 | 1187.6 |
| 12.5°  | 1211.3 | 1201.1 | 1170.5 | 1163.8 | 1151.2 |
| 15°    | 1190.9 | 1178.4 | 1139.9 | 1118.4 | 1107.1 |
| 17.5°  | 1167.1 | 1149.0 | 1101.4 | 1076.5 | 1058.3 |
| 20°    | 1139.9 | 1117.2 | 1060.6 | 1032.4 | 1007.3 |
| 22.5°  | 1110.5 | 1084.4 | 1018.7 | 980.2  | 963.2  |
| 25°    | 1081.1 | 1044.7 | 970.0  | 923.5  | 906.5  |
| 27.5°  | 1045.9 | 1007.3 | 924.6  | 871.4  | 845.3  |
| 30°    | 1008.6 | 965.4  | 874.7  | 817.1  | 786.4  |
| 32.5°  | 972.2  | 920.1  | 827.3  | 759.2  | 730.8  |
| 35°    | 931.5  | 873.6  | 774.0  | 702.6  | 677.6  |
| 37.5°  | 891.8  | 829.4  | 724.1  | 645.8  | 617.6  |
| 40°    | 849.9  | 781.9  | 672.0  | 591.5  | 562.1  |
| 42.5°  | 806.8  | 734.4  | 619.9  | 535.9  | 507.7  |
| 45°    | 761.5  | 685.5  | 566.6  | 486.0  | 458.9  |
| 47.5°  | 718.4  | 638.0  | 515.6  | 435.1  | 410.2  |
| 50°    | 670.9  | 590.4  | 465.7  | 387.5  | 363.8  |
| 52.5°  | 624.3  | 539.4  | 418.2  | 343.4  | 321.8  |
| 55°    | 579.0  | 490.6  | 368.2  | 300.3  | 278.8  |
| 57.5°  | 532.6  | 441.9  | 324.2  | 260.6  | 242.5  |
| 60°    | 484.9  | 394.4  | 277.6  | 219.8  | 201.8  |
| 62.5°  | 438.6  | 347.9  | 237.9  | 183.6  | 174.6  |
| 65°    | 390.9  | 299.1  | 197.1  | 158.6  | 155.2  |
| 67.5°  | 345.7  | 253.8  | 158.6  | 139.4  | 135.9  |
| 70°    | 298.0  | 209.6  | 131.4  | 120.1  | 115.5  |
| 72.5°  | 252.7  | 168.7  | 109.9  | 100.9  | 98.6   |
| 75°    | 208.4  | 129.2  | 90.7   | 82.7   | 81.6   |
| 77.5°  | 164.3  | 91.7   | 71.4   | 66.9   | 64.5   |
| 80°    | 123.5  | 65.7   | 54.3   | 49.9   | 49.9   |
| 82.5°  | 86.0   | 44.2   | 37.4   | 35.1   | 35.1   |
| 85°    | 48.7   | 24.8   | 21.5   | 21.5   | 21.5   |
| 87.5°  | 18.2   | 9.0    | 9.0    | 8.0    | 8.0    |
| 90°    | 0.9    | 10.4   | 28.3   | 26.6   | 27.5   |
| 92.5°  | 17.9   | 24.2   | 25.1   | 26.0   | 26.0   |
| 95°    | 42.2   | 50.3   | 51.7   | 51.7   | 50.3   |
| 97.5°  | 70.2   | 77.7   | 80.9   | 80.9   | 80.9   |
| 100°   | 102.5  | 109.2  | 111.5  | 111.5  | 110.7  |
| 102.5° | 136.6  | 141.6  | 144.7  | 145.6  | 144.7  |
| 105°   | 173.9  | 176.2  | 177.9  | 179.4  | 179.4  |
| 107.5° | 210.9  | 214.3  | 214.3  | 214.9  | 210.9  |
| 110°   | 246.7  | 251.4  | 251.4  | 251.4  | 249.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 285.4 | 290.3 | 289.4 | 287.1 | 285.4 |
| 115°   | 323.6 | 328.1 | 326.7 | 325.9 | 323.6 |
| 117.5° | 361.3 | 367.7 | 363.7 | 361.3 | 359.0 |
| 120°   | 399.5 | 405.9 | 399.5 | 399.5 | 396.9 |
| 122.5° | 434.1 | 442.2 | 438.2 | 435.9 | 434.1 |
| 125°   | 470.6 | 477.8 | 475.4 | 472.8 | 472.0 |
| 127.5° | 506.0 | 515.0 | 511.9 | 508.4 | 506.0 |
| 130°   | 539.3 | 549.7 | 548.3 | 546.5 | 543.3 |
| 132.5° | 576.5 | 584.6 | 585.2 | 581.2 | 578.9 |
| 135°   | 608.6 | 617.5 | 619.4 | 618.4 | 616.1 |
| 137.5° | 644.4 | 651.7 | 653.1 | 652.6 | 649.0 |
| 140°   | 675.9 | 683.2 | 687.2 | 687.2 | 684.0 |
| 142.5° | 708.3 | 715.5 | 717.8 | 718.7 | 715.5 |
| 145°   | 738.9 | 744.7 | 749.3 | 750.1 | 747.0 |
| 147.5° | 766.4 | 773.6 | 777.0 | 778.5 | 775.3 |
| 150°   | 794.7 | 799.6 | 802.7 | 805.4 | 802.7 |
| 152.5° | 819.8 | 824.7 | 828.7 | 831.9 | 828.7 |
| 155°   | 845.0 | 847.2 | 849.8 | 853.8 | 851.3 |
| 157.5° | 866.6 | 868.3 | 869.8 | 875.6 | 871.5 |
| 160°   | 886.0 | 887.7 | 888.6 | 893.4 | 890.0 |
| 162.5° | 903.8 | 903.8 | 904.7 | 910.2 | 906.2 |
| 165°   | 919.2 | 918.3 | 918.3 | 924.0 | 920.0 |
| 167.5° | 933.0 | 930.4 | 930.4 | 936.1 | 932.1 |
| 170°   | 943.4 | 941.1 | 940.3 | 946.0 | 941.1 |
| 172.5° | 950.6 | 948.4 | 947.5 | 953.2 | 948.4 |
| 175°   | 956.4 | 954.1 | 952.4 | 958.2 | 953.2 |
| 177.5° | 959.6 | 957.3 | 955.5 | 960.5 | 955.5 |
| 180°   | 958.2 | 958.2 | 958.2 | 958.2 | 958.2 |



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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 | 10.68            | 11.50 | 11.65 | 12.48 | 13.77 | 6.66           | 7.48  | 7.63  | 8.46  | 9.75  |
|                 | 3H   | 12.33            | 13.06 | 13.31 | 14.05 | 15.36 | 7.83           | 8.57  | 8.81  | 9.56  | 10.87 |
|                 | 4H   | 12.92            | 13.61 | 13.92 | 14.61 | 15.93 | 8.27           | 8.96  | 9.26  | 9.96  | 11.28 |
|                 | 6H   | 13.32            | 13.96 | 14.33 | 14.96 | 16.29 | 8.57           | 9.21  | 9.58  | 10.21 | 11.54 |
|                 | 8H   | 13.44            | 14.04 | 14.45 | 15.06 | 16.39 | 8.66           | 9.27  | 9.67  | 10.28 | 11.61 |
|                 | 12H  | 13.49            | 14.07 | 14.50 | 15.07 | 16.42 | 8.69           | 9.27  | 9.71  | 10.28 | 11.63 |
| 4H              | 2H   | 10.69            | 11.39 | 11.69 | 12.38 | 13.70 | 7.24           | 7.93  | 8.24  | 8.93  | 10.25 |
|                 | 3H   | 12.49            | 13.07 | 13.50 | 14.09 | 15.42 | 8.57           | 9.15  | 9.58  | 10.17 | 11.50 |
|                 | 4H   | 13.16            | 13.69 | 14.18 | 14.71 | 16.06 | 9.10           | 9.63  | 10.12 | 10.65 | 12.00 |
|                 | 6H   | 13.65            | 14.11 | 14.68 | 15.15 | 16.50 | 9.50           | 9.96  | 10.53 | 11.00 | 12.35 |
|                 | 8H   | 13.81            | 14.24 | 14.84 | 15.27 | 16.64 | 9.62           | 10.05 | 10.65 | 11.08 | 12.44 |
|                 | 12H  | 13.89            | 14.28 | 14.94 | 15.32 | 16.69 | 9.68           | 10.06 | 10.72 | 11.11 | 12.48 |
| 8H              | 4H   | 13.13            | 13.55 | 14.16 | 14.58 | 15.95 | 9.37           | 9.79  | 10.40 | 10.82 | 12.19 |
|                 | 6H   | 13.66            | 14.01 | 14.72 | 15.09 | 16.45 | 9.86           | 10.21 | 10.92 | 11.29 | 12.65 |
|                 | 8H   | 13.86            | 14.17 | 14.93 | 15.23 | 16.61 | 10.04          | 10.35 | 11.10 | 11.41 | 12.79 |
|                 | 12H  | 13.98            | 14.25 | 15.05 | 15.31 | 16.73 | 10.14          | 10.41 | 11.21 | 11.47 | 12.89 |
| 12H             | 4H   | 13.08            | 13.46 | 14.12 | 14.51 | 15.88 | 9.37           | 9.75  | 10.42 | 10.80 | 12.17 |
|                 | 6H   | 13.64            | 13.95 | 14.70 | 15.00 | 16.39 | 9.90           | 10.21 | 10.97 | 11.27 | 12.65 |
|                 | 8H   | 13.84            | 14.11 | 14.90 | 15.16 | 16.59 | 10.10          | 10.37 | 11.16 | 11.42 | 12.85 |