

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: P902624

Luminaire Tested: DFN2DIP-HX3F0-070D050US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P902624  
REPORT IS A COMBINATION OF REPORTS P899238 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D050US830-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

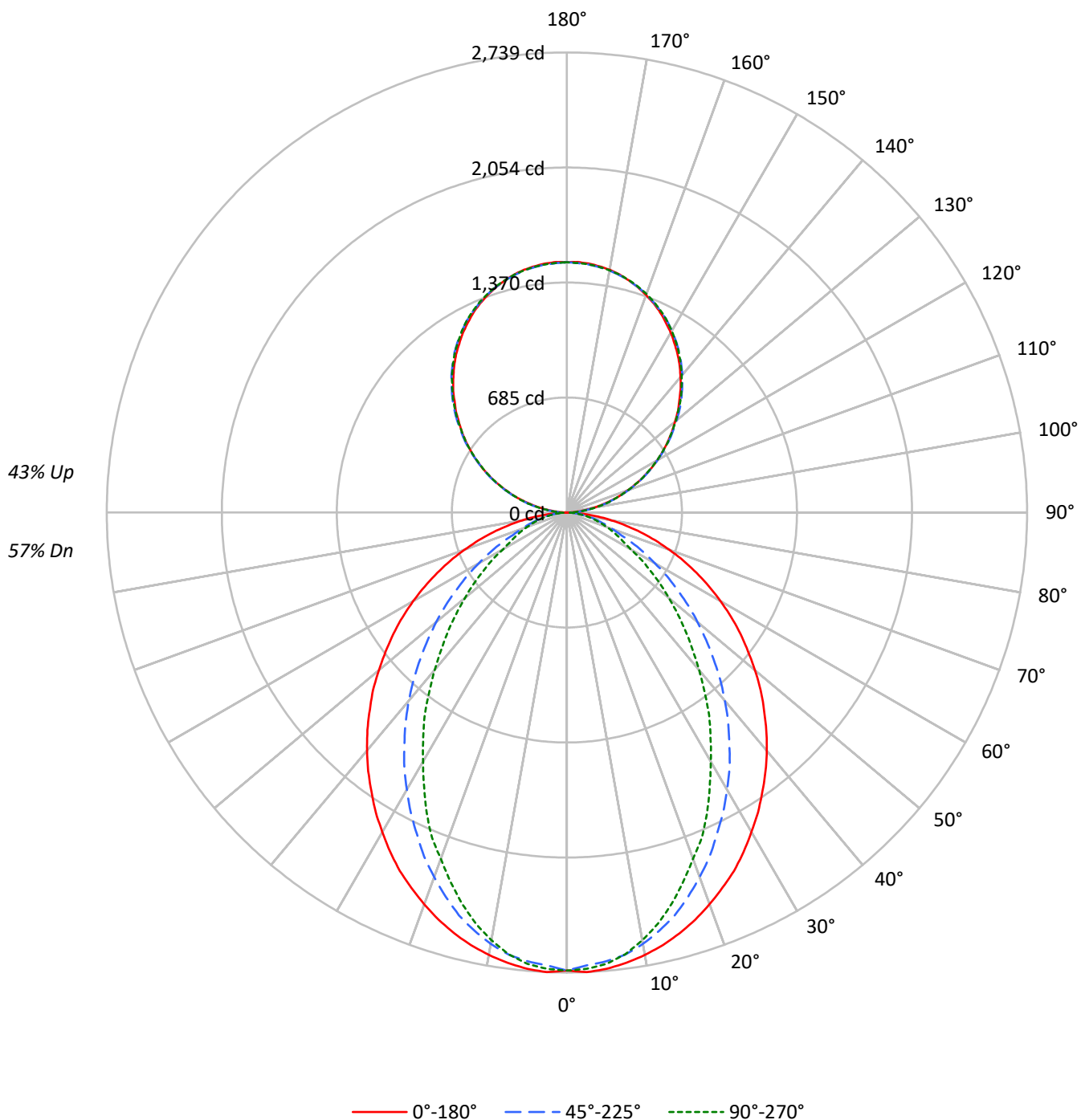
Lumens per Lamp: N/A  
Luminaire Lumens: 9778.8 lumens  
Efficiency: N/A  
Efficacy: 92.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 105.8  
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: P902624

CATALOG NUMBER: DFN2DIP-HX3F0-070D050US830-RLFL

### Luminous Intensity Polar Plot



TEST NUMBER: P902624

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**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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 89  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 63 | 56 | 55 | 54 |
| 2   | 92  | 84  | 78  | 73  | 85  | 79  | 74  | 69  | 69 | 65 | 61 | 59 | 56 | 54 | 50 | 48 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 47 | 43 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 34 | 31 | 34 | 30 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 27 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 26  | 46  | 35  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3159 | 3159 | 3159 |
| 5°  | 3162 | 3106 | 3127 |
| 10° | 3130 | 3043 | 3023 |
| 15° | 3085 | 2941 | 2864 |
| 20° | 3027 | 2800 | 2670 |
| 25° | 2967 | 2642 | 2482 |
| 30° | 2887 | 2481 | 2245 |
| 35° | 2808 | 2308 | 2036 |
| 40° | 2729 | 2130 | 1798 |
| 45° | 2636 | 1932 | 1581 |
| 50° | 2540 | 1732 | 1370 |
| 55° | 2440 | 1519 | 1167 |
| 60° | 2324 | 1296 | 959  |
| 65° | 2190 | 1070 | 861  |
| 70° | 2028 | 859  | 777  |
| 75° | 1824 | 753  | 703  |
| 80° | 1529 | 625  | 604  |
| 85° | 1044 | 406  | 443  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2636 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 255.6  | 2.6       |
| 10°-20°   | 701.6  | 7.2       |
| 20°-30°   | 985.0  | 10.1      |
| 30°-40°   | 1073.7 | 11.0      |
| 40°-50°   | 986.9  | 10.1      |
| 50°-60°   | 775.0  | 7.9       |
| 60°-70°   | 504.5  | 5.2       |
| 70°-80°   | 259.7  | 2.7       |
| 80°-90°   | 70.5   | 0.7       |
| 90°-100°  | 92.2   | 0.9       |
| 100°-110° | 293.0  | 3.0       |
| 110°-120° | 501.5  | 5.1       |
| 120°-130° | 659.5  | 6.7       |
| 130°-140° | 740.3  | 7.6       |
| 140°-150° | 725.9  | 7.4       |
| 150°-160° | 609.0  | 6.2       |
| 160°-170° | 403.9  | 4.1       |
| 170°-180° | 141.2  | 1.4       |
| 0°-30°    | 1942.1 | 19.9      |
| 0°-40°    | 3015.8 | 30.8      |
| 0°-60°    | 4777.7 | 48.9      |
| 0°-90°    | 5612.3 | 57.4      |
| 90°-120°  | 886.7  | 9.1       |
| 90°-150°  | 3012.5 | 30.8      |
| 90°-180°  | 4167.0 | 42.6      |
| 0°-180°   | 9778.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2727 | 2727  | 2727 | 2727  | 2727 |      |
| 5°   | 2727 | 2714  | 2682 | 2705  | 2697 | 259  |
| 15°  | 2594 | 2566  | 2483 | 2436  | 2411 | 731  |
| 25°  | 2354 | 2275  | 2112 | 2011  | 1974 | 1083 |
| 35°  | 2028 | 1903  | 1686 | 1530  | 1476 | 1270 |
| 45°  | 1658 | 1493  | 1234 | 1059  | 999  | 1281 |
| 55°  | 1261 | 1068  | 802  | 654   | 607  | 1127 |
| 65°  | 851  | 651   | 429  | 346   | 338  | 844  |
| 75°  | 454  | 281   | 197  | 180   | 178  | 480  |
| 85°  | 106  | 54    | 47   | 47    | 47   | 122  |
| 90°  | 1    | 16    | 44   | 41    | 43   | 10   |
| 95°  | 66   | 78    | 80   | 80    | 78   | 73   |
| 105° | 270  | 274   | 277  | 279   | 279  | 285  |
| 115° | 503  | 510   | 508  | 507   | 503  | 498  |
| 125° | 732  | 743   | 740  | 736   | 734  | 654  |
| 135° | 947  | 961   | 963  | 962   | 958  | 732  |
| 145° | 1149 | 1158  | 1166 | 1167  | 1162 | 718  |
| 155° | 1314 | 1318  | 1322 | 1328  | 1324 | 605  |
| 165° | 1430 | 1428  | 1428 | 1438  | 1431 | 403  |
| 175° | 1488 | 1484  | 1482 | 1490  | 1483 | 141  |
| 180° | 1490 | 1490  | 1490 | 1490  | 1490 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2726.9 | 2726.9 | 2726.9 | 2726.9 | 2726.9 |
| 2.5°   | 2739.1 | 2726.9 | 2699.6 | 2724.5 | 2719.5 |
| 5°     | 2726.9 | 2714.5 | 2682.4 | 2704.6 | 2697.3 |
| 7.5°   | 2704.6 | 2689.9 | 2655.4 | 2665.0 | 2652.8 |
| 10°    | 2675.0 | 2657.8 | 2608.5 | 2600.9 | 2586.2 |
| 12.5°  | 2638.1 | 2615.8 | 2549.1 | 2534.4 | 2507.2 |
| 15°    | 2593.6 | 2566.4 | 2482.6 | 2435.7 | 2411.1 |
| 17.5°  | 2541.8 | 2502.3 | 2398.6 | 2344.3 | 2304.8 |
| 20°    | 2482.6 | 2433.1 | 2309.8 | 2248.2 | 2193.8 |
| 22.5°  | 2418.5 | 2361.6 | 2218.4 | 2134.6 | 2097.7 |
| 25°    | 2354.3 | 2275.2 | 2112.3 | 2011.3 | 1974.2 |
| 27.5°  | 2277.8 | 2193.8 | 2013.6 | 1897.7 | 1840.9 |
| 30°    | 2196.4 | 2102.4 | 1905.0 | 1779.3 | 1712.6 |
| 32.5°  | 2117.3 | 2003.8 | 1801.6 | 1653.4 | 1591.6 |
| 35°    | 2028.5 | 1902.6 | 1685.6 | 1530.1 | 1475.6 |
| 37.5°  | 1942.2 | 1806.3 | 1577.0 | 1406.5 | 1345.0 |
| 40°    | 1850.8 | 1702.9 | 1463.3 | 1288.2 | 1224.0 |
| 42.5°  | 1757.1 | 1599.2 | 1349.9 | 1167.2 | 1105.7 |
| 45°    | 1658.4 | 1492.9 | 1234.0 | 1058.6 | 999.4  |
| 47.5°  | 1564.6 | 1389.5 | 1122.9 | 947.5  | 893.3  |
| 50°    | 1460.9 | 1285.8 | 1014.3 | 843.9  | 792.3  |
| 52.5°  | 1359.6 | 1174.5 | 910.6  | 747.7  | 700.9  |
| 55°    | 1260.9 | 1068.5 | 801.9  | 654.0  | 607.2  |
| 57.5°  | 1159.9 | 962.4  | 705.9  | 567.6  | 528.1  |
| 60°    | 1056.2 | 858.8  | 604.5  | 478.9  | 439.3  |
| 62.5°  | 955.1  | 757.7  | 518.1  | 399.8  | 380.1  |
| 65°    | 851.4  | 651.4  | 429.4  | 345.6  | 338.0  |
| 67.5°  | 752.7  | 552.7  | 345.6  | 303.4  | 296.1  |
| 70°    | 649.0  | 456.6  | 286.2  | 261.6  | 251.6  |
| 72.5°  | 550.4  | 367.6  | 239.3  | 219.7  | 214.7  |
| 75°    | 454.0  | 281.2  | 197.4  | 180.1  | 177.8  |
| 77.5°  | 357.9  | 199.7  | 155.5  | 145.5  | 140.6  |
| 80°    | 268.9  | 143.2  | 118.4  | 108.7  | 108.7  |
| 82.5°  | 187.5  | 96.3   | 81.4   | 76.4   | 76.4   |
| 85°    | 106.0  | 54.2   | 46.8   | 46.8   | 46.8   |
| 87.5°  | 39.5   | 19.6   | 19.6   | 17.2   | 17.2   |
| 90°    | 1.3    | 16.2   | 44.0   | 41.4   | 42.7   |
| 92.5°  | 27.9   | 37.7   | 39.1   | 40.4   | 40.4   |
| 95°    | 65.6   | 78.2   | 80.4   | 80.4   | 78.2   |
| 97.5°  | 109.1  | 120.8  | 125.8  | 125.8  | 125.8  |
| 100°   | 159.5  | 169.8  | 173.4  | 173.4  | 172.1  |
| 102.5° | 212.5  | 220.2  | 225.1  | 226.5  | 225.1  |
| 105°   | 270.5  | 274.1  | 276.8  | 279.0  | 279.0  |
| 107.5° | 328.0  | 333.4  | 333.4  | 334.3  | 328.0  |
| 110°   | 383.7  | 391.0  | 391.0  | 391.0  | 387.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 443.9  | 451.6  | 450.3  | 446.7  | 443.9  |
| 115°   | 503.2  | 510.5  | 508.2  | 506.9  | 503.2  |
| 117.5° | 562.1  | 572.0  | 565.7  | 562.1  | 558.6  |
| 120°   | 621.4  | 631.3  | 621.4  | 621.4  | 617.4  |
| 122.5° | 675.3  | 688.0  | 681.6  | 678.1  | 675.3  |
| 125°   | 732.0  | 743.2  | 739.6  | 735.6  | 734.2  |
| 127.5° | 787.2  | 801.2  | 796.3  | 790.8  | 787.2  |
| 130°   | 839.0  | 855.1  | 852.8  | 850.2  | 845.2  |
| 132.5° | 896.9  | 909.5  | 910.4  | 904.1  | 900.5  |
| 135°   | 946.8  | 960.6  | 963.4  | 962.1  | 958.5  |
| 137.5° | 1002.5 | 1013.7 | 1016.0 | 1015.0 | 1009.7 |
| 140°   | 1051.4 | 1062.7 | 1068.9 | 1068.9 | 1064.0 |
| 142.5° | 1101.7 | 1113.0 | 1116.6 | 1117.9 | 1113.0 |
| 145°   | 1149.4 | 1158.4 | 1165.5 | 1167.0 | 1162.0 |
| 147.5° | 1192.1 | 1203.3 | 1208.7 | 1211.0 | 1206.0 |
| 150°   | 1236.1 | 1243.8 | 1248.7 | 1252.7 | 1248.7 |
| 152.5° | 1275.3 | 1282.9 | 1289.1 | 1294.1 | 1289.1 |
| 155°   | 1314.3 | 1317.9 | 1321.9 | 1328.2 | 1324.2 |
| 157.5° | 1348.0 | 1350.7 | 1352.9 | 1362.0 | 1355.7 |
| 160°   | 1378.1 | 1380.8 | 1382.1 | 1389.8 | 1384.4 |
| 162.5° | 1406.0 | 1406.0 | 1407.3 | 1415.9 | 1409.6 |
| 165°   | 1429.8 | 1428.4 | 1428.4 | 1437.5 | 1431.2 |
| 167.5° | 1451.3 | 1447.3 | 1447.3 | 1456.3 | 1450.0 |
| 170°   | 1467.5 | 1464.0 | 1462.6 | 1471.6 | 1464.0 |
| 172.5° | 1478.8 | 1475.2 | 1473.9 | 1482.8 | 1475.2 |
| 175°   | 1487.8 | 1484.1 | 1481.5 | 1490.4 | 1482.8 |
| 177.5° | 1492.7 | 1489.1 | 1486.4 | 1494.0 | 1486.4 |
| 180°   | 1490.4 | 1490.4 | 1490.4 | 1490.4 | 1490.4 |

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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 | 11.76            | 12.66 | 12.66 | 13.57 | 14.73 | 7.74           | 8.63  | 8.64  | 9.55  | 10.71 |
|                 | 3H   | 13.44            | 14.24 | 14.35 | 15.16 | 16.35 | 8.93           | 9.73  | 9.84  | 10.65 | 11.84 |
|                 | 4H   | 14.04            | 14.80 | 14.97 | 15.73 | 16.93 | 9.38           | 10.13 | 10.30 | 11.06 | 12.26 |
|                 | 6H   | 14.46            | 15.16 | 15.40 | 16.09 | 17.30 | 9.70           | 10.39 | 10.63 | 11.33 | 12.54 |
|                 | 8H   | 14.59            | 15.25 | 15.53 | 16.20 | 17.41 | 9.79           | 10.45 | 10.73 | 11.40 | 12.61 |
|                 | 12H  | 14.65            | 15.28 | 15.60 | 16.22 | 17.46 | 9.83           | 10.46 | 10.78 | 11.41 | 12.64 |
| 4H              | 2H   | 11.79            | 12.54 | 12.72 | 13.47 | 14.67 | 8.34           | 9.09  | 9.27  | 10.02 | 11.22 |
|                 | 3H   | 13.61            | 14.24 | 14.55 | 15.20 | 16.41 | 9.69           | 10.32 | 10.63 | 11.27 | 12.49 |
|                 | 4H   | 14.30            | 14.87 | 15.25 | 15.83 | 17.07 | 10.23          | 10.81 | 11.19 | 11.76 | 13.00 |
|                 | 6H   | 14.81            | 15.31 | 15.78 | 16.28 | 17.52 | 10.65          | 11.14 | 11.62 | 12.12 | 13.36 |
|                 | 8H   | 14.99            | 15.44 | 15.95 | 16.42 | 17.67 | 10.78          | 11.24 | 11.75 | 12.21 | 13.46 |
|                 | 12H  | 15.08            | 15.49 | 16.06 | 16.48 | 17.74 | 10.85          | 11.26 | 11.83 | 12.25 | 13.50 |
| 8H              | 4H   | 14.27            | 14.73 | 15.24 | 15.70 | 16.96 | 10.51          | 10.97 | 11.48 | 11.94 | 13.20 |
|                 | 6H   | 14.83            | 15.21 | 15.82 | 16.23 | 17.48 | 11.03          | 11.41 | 12.02 | 12.42 | 13.67 |
|                 | 8H   | 15.05            | 15.38 | 16.04 | 16.38 | 17.65 | 11.22          | 11.55 | 12.22 | 12.55 | 13.82 |
|                 | 12H  | 15.18            | 15.48 | 16.18 | 16.47 | 17.79 | 11.33          | 11.63 | 12.34 | 12.62 | 13.94 |
| 12H             | 4H   | 14.23            | 14.64 | 15.21 | 15.63 | 16.89 | 10.52          | 10.94 | 11.51 | 11.92 | 13.18 |
|                 | 6H   | 14.81            | 15.14 | 15.81 | 16.14 | 17.41 | 11.08          | 11.41 | 12.08 | 12.41 | 13.68 |
|                 | 8H   | 15.03            | 15.32 | 16.03 | 16.32 | 17.63 | 11.29          | 11.58 | 12.29 | 12.57 | 13.89 |