

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: P923070

Luminaire Tested: DFN2DIP-SQ4F0-070D060US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P923070  
REPORT IS A COMBINATION OF REPORTS P900062 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-070D060US940-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

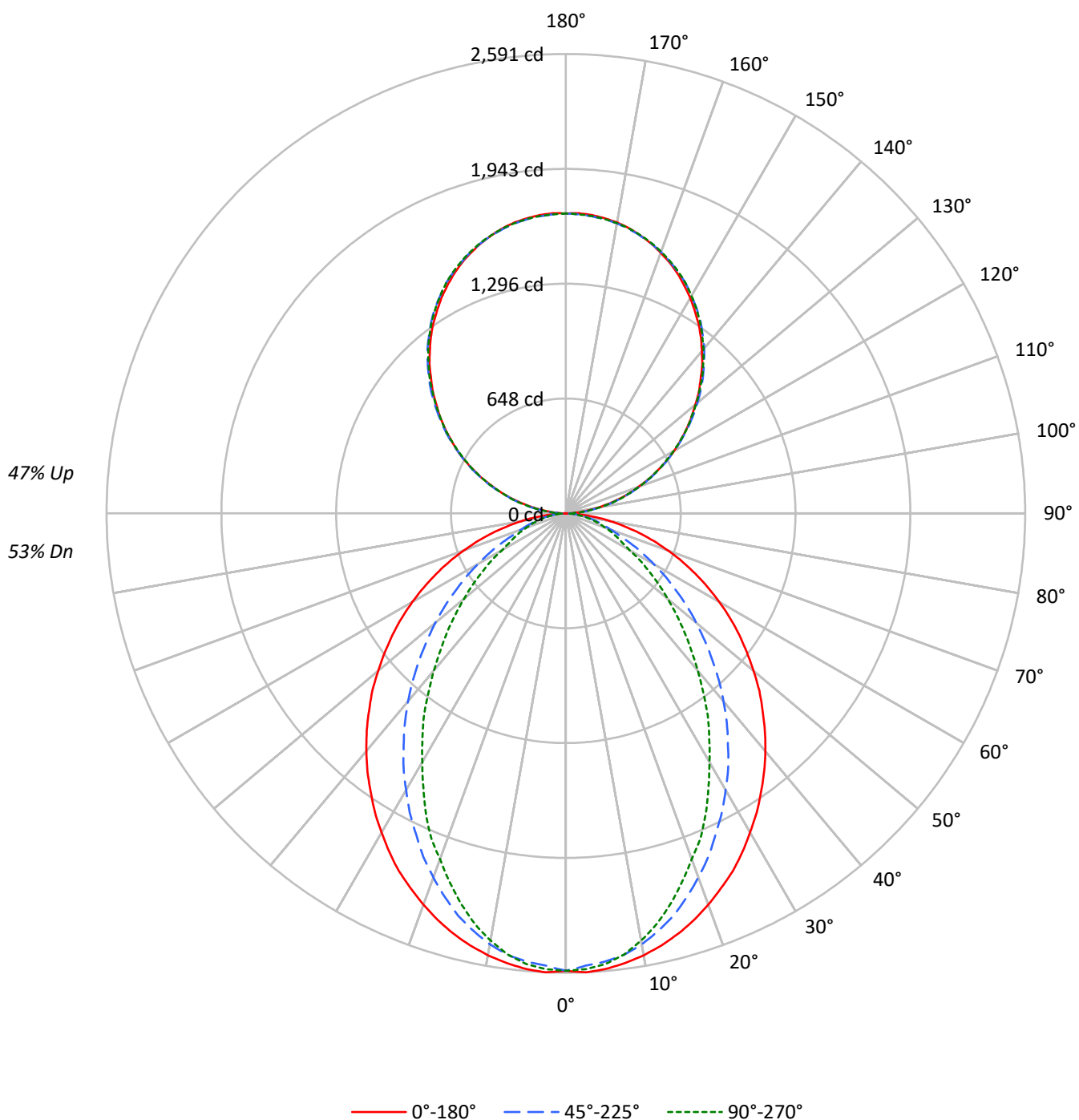
Lumens per Lamp: N/A  
Luminaire Lumens: 10040.6 lumens  
Efficiency: N/A  
Efficacy: 94.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 106.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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: P923070

CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US940-RLFL

**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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 99  | 95  | 91  | 88  | 92  | 88  | 85  | 82  | 75 | 73 | 71 | 64 | 62 | 60 | 53 | 52 | 51 |
| 2   | 91  | 83  | 77  | 72  | 84  | 78  | 72  | 68  | 67 | 63 | 59 | 56 | 54 | 51 | 47 | 45 | 43 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 62  | 57  | 59 | 54 | 51 | 50 | 47 | 44 | 42 | 40 | 38 |
| 4   | 76  | 66  | 58  | 52  | 70  | 61  | 54  | 49  | 53 | 48 | 44 | 45 | 41 | 38 | 38 | 35 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 42 | 38 | 41 | 37 | 33 | 34 | 31 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 50  | 42  | 37  | 43 | 38 | 33 | 37 | 33 | 30 | 31 | 28 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 30 | 26 | 29 | 26 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 29  | 36 | 30 | 27 | 31 | 27 | 24 | 27 | 23 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 26  | 33 | 28 | 24 | 29 | 24 | 21 | 25 | 21 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 31 | 25 | 22 | 27 | 22 | 19 | 23 | 20 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1810 | 1810 | 1810 |
| 5°  | 1813 | 1782 | 1793 |
| 10° | 1795 | 1747 | 1736 |
| 15° | 1770 | 1690 | 1646 |
| 20° | 1738 | 1611 | 1536 |
| 25° | 1704 | 1522 | 1429 |
| 30° | 1659 | 1430 | 1294 |
| 35° | 1615 | 1332 | 1175 |
| 40° | 1570 | 1231 | 1038 |
| 45° | 1518 | 1118 | 915  |
| 50° | 1464 | 1004 | 794  |
| 55° | 1408 | 883  | 678  |
| 60° | 1343 | 755  | 559  |
| 65° | 1268 | 626  | 503  |
| 70° | 1177 | 505  | 456  |
| 75° | 1063 | 446  | 416  |
| 80° | 898  | 376  | 363  |
| 85° | 625  | 252  | 276  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1518 cd/sqm

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CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US940-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 241.8   | 2.4       |
| 10°-20°   | 663.7   | 6.6       |
| 20°-30°   | 931.9   | 9.3       |
| 30°-40°   | 1015.8  | 10.1      |
| 40°-50°   | 933.6   | 9.3       |
| 50°-60°   | 733.2   | 7.3       |
| 60°-70°   | 477.3   | 4.8       |
| 70°-80°   | 245.7   | 2.4       |
| 80°-90°   | 67.5    | 0.7       |
| 90°-100°  | 104.7   | 1.0       |
| 100°-110° | 332.7   | 3.3       |
| 110°-120° | 569.3   | 5.7       |
| 120°-130° | 748.8   | 7.5       |
| 130°-140° | 840.5   | 8.4       |
| 140°-150° | 824.2   | 8.2       |
| 150°-160° | 691.4   | 6.9       |
| 160°-170° | 458.5   | 4.6       |
| 170°-180° | 160.3   | 1.6       |
| 0°-30°    | 1837.4  | 18.3      |
| 0°-40°    | 2853.2  | 28.4      |
| 0°-60°    | 4520.0  | 45.0      |
| 0°-90°    | 5310.5  | 52.9      |
| 90°-120°  | 1006.7  | 10.0      |
| 90°-150°  | 3420.1  | 34.1      |
| 90°-180°  | 4730.0  | 47.1      |
| 0°-180°   | 10040.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2580 | 2580  | 2580 | 2580  | 2580 |      |
| 5°   | 2580 | 2568  | 2538 | 2559  | 2552 | 245  |
| 15°  | 2454 | 2428  | 2349 | 2304  | 2281 | 691  |
| 25°  | 2227 | 2152  | 1998 | 1903  | 1868 | 1024 |
| 35°  | 1919 | 1800  | 1595 | 1448  | 1396 | 1201 |
| 45°  | 1569 | 1412  | 1167 | 1002  | 946  | 1212 |
| 55°  | 1193 | 1011  | 759  | 619   | 574  | 1066 |
| 65°  | 806  | 616   | 406  | 327   | 320  | 799  |
| 75°  | 430  | 266   | 187  | 170   | 168  | 454  |
| 85°  | 100  | 51    | 44   | 44    | 44   | 115  |
| 90°  | 2    | 18    | 50   | 47    | 48   | 10   |
| 95°  | 74   | 89    | 91   | 91    | 89   | 83   |
| 105° | 307  | 311   | 314  | 317   | 317  | 324  |
| 115° | 571  | 580   | 577  | 575   | 571  | 565  |
| 125° | 831  | 844   | 840  | 835   | 834  | 743  |
| 135° | 1075 | 1091  | 1094 | 1092  | 1088 | 831  |
| 145° | 1305 | 1315  | 1323 | 1325  | 1319 | 815  |
| 155° | 1492 | 1496  | 1501 | 1508  | 1503 | 687  |
| 165° | 1623 | 1622  | 1622 | 1632  | 1625 | 458  |
| 175° | 1689 | 1685  | 1682 | 1692  | 1683 | 160  |
| 180° | 1692 | 1692  | 1692 | 1692  | 1692 |      |

TEST NUMBER: P923070

CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US940-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2579.8 | 2579.8 | 2579.8 | 2579.8 | 2579.8 |
| 2.5°   | 2591.4 | 2579.8 | 2554.0 | 2577.6 | 2572.9 |
| 5°     | 2579.8 | 2568.1 | 2537.7 | 2558.8 | 2551.8 |
| 7.5°   | 2558.8 | 2544.9 | 2512.2 | 2521.3 | 2509.7 |
| 10°    | 2530.8 | 2514.4 | 2467.8 | 2460.7 | 2446.8 |
| 12.5°  | 2495.8 | 2474.8 | 2411.6 | 2397.7 | 2371.9 |
| 15°    | 2453.7 | 2427.9 | 2348.7 | 2304.4 | 2281.1 |
| 17.5°  | 2404.7 | 2367.3 | 2269.2 | 2217.9 | 2180.5 |
| 20°    | 2348.7 | 2301.9 | 2185.2 | 2127.0 | 2075.5 |
| 22.5°  | 2288.0 | 2234.3 | 2098.7 | 2019.5 | 1984.6 |
| 25°    | 2227.3 | 2152.5 | 1998.4 | 1902.8 | 1867.7 |
| 27.5°  | 2155.0 | 2075.5 | 1905.1 | 1795.4 | 1741.6 |
| 30°    | 2078.0 | 1989.0 | 1802.2 | 1683.4 | 1620.2 |
| 32.5°  | 2003.1 | 1895.7 | 1704.4 | 1564.2 | 1505.7 |
| 35°    | 1919.1 | 1800.0 | 1594.7 | 1447.6 | 1396.1 |
| 37.5°  | 1837.5 | 1708.9 | 1491.9 | 1330.6 | 1272.5 |
| 40°    | 1751.0 | 1611.1 | 1384.4 | 1218.7 | 1158.0 |
| 42.5°  | 1662.3 | 1513.0 | 1277.1 | 1104.2 | 1046.1 |
| 45°    | 1569.0 | 1412.4 | 1167.4 | 1001.5 | 945.5  |
| 47.5°  | 1480.2 | 1314.6 | 1062.4 | 896.4  | 845.2  |
| 50°    | 1382.2 | 1216.5 | 959.6  | 798.3  | 749.6  |
| 52.5°  | 1286.3 | 1111.2 | 861.5  | 707.4  | 663.1  |
| 55°    | 1192.9 | 1010.8 | 758.7  | 618.8  | 574.4  |
| 57.5°  | 1097.3 | 910.5  | 667.8  | 537.0  | 499.6  |
| 60°    | 999.3  | 812.4  | 571.9  | 453.1  | 415.6  |
| 62.5°  | 903.6  | 716.8  | 490.2  | 378.3  | 359.6  |
| 65°    | 805.5  | 616.3  | 406.3  | 327.0  | 319.8  |
| 67.5°  | 712.1  | 522.9  | 327.0  | 287.0  | 280.2  |
| 70°    | 614.0  | 431.9  | 270.7  | 247.4  | 238.0  |
| 72.5°  | 520.7  | 347.8  | 226.4  | 207.9  | 203.1  |
| 75°    | 429.5  | 266.0  | 186.7  | 170.4  | 168.2  |
| 77.5°  | 338.6  | 189.0  | 147.1  | 137.7  | 133.0  |
| 80°    | 254.4  | 135.5  | 112.0  | 102.8  | 102.8  |
| 82.5°  | 177.4  | 91.1   | 77.0   | 72.3   | 72.3   |
| 85°    | 100.3  | 51.3   | 44.3   | 44.3   | 44.3   |
| 87.5°  | 37.4   | 18.5   | 18.5   | 16.3   | 16.3   |
| 90°    | 1.5    | 18.4   | 50.0   | 46.9   | 48.4   |
| 92.5°  | 31.7   | 42.9   | 44.4   | 45.9   | 45.9   |
| 95°    | 74.5   | 88.7   | 91.3   | 91.3   | 88.7   |
| 97.5°  | 123.9  | 137.2  | 142.9  | 142.9  | 142.9  |
| 100°   | 181.1  | 192.8  | 196.9  | 196.9  | 195.4  |
| 102.5° | 241.3  | 249.9  | 255.6  | 257.1  | 255.6  |
| 105°   | 307.1  | 311.2  | 314.2  | 316.8  | 316.8  |
| 107.5° | 372.4  | 378.5  | 378.5  | 379.5  | 372.4  |
| 110°   | 435.7  | 443.8  | 443.8  | 443.8  | 439.7  |

TEST NUMBER: P923070

CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US940-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.0  | 512.6  | 511.1  | 507.0  | 504.0  |
| 115°   | 571.3  | 579.5  | 576.9  | 575.4  | 571.3  |
| 117.5° | 638.2  | 649.4  | 642.2  | 638.2  | 634.1  |
| 120°   | 705.5  | 716.8  | 705.5  | 705.5  | 700.9  |
| 122.5° | 766.7  | 781.0  | 773.8  | 769.8  | 766.7  |
| 125°   | 831.0  | 843.7  | 839.6  | 835.1  | 833.6  |
| 127.5° | 893.8  | 909.5  | 903.9  | 897.9  | 893.8  |
| 130°   | 952.4  | 970.8  | 968.2  | 965.2  | 959.6  |
| 132.5° | 1018.2 | 1032.5 | 1033.5 | 1026.4 | 1022.3 |
| 135°   | 1074.9 | 1090.7 | 1093.7 | 1092.2 | 1088.1 |
| 137.5° | 1138.1 | 1150.8 | 1153.4 | 1152.4 | 1146.3 |
| 140°   | 1193.7 | 1206.5 | 1213.6 | 1213.6 | 1208.0 |
| 142.5° | 1250.8 | 1263.6 | 1267.7 | 1269.2 | 1263.6 |
| 145°   | 1304.9 | 1315.1 | 1323.3 | 1324.8 | 1319.2 |
| 147.5° | 1353.3 | 1366.1 | 1372.3 | 1374.7 | 1369.1 |
| 150°   | 1403.4 | 1412.0 | 1417.6 | 1422.2 | 1417.6 |
| 152.5° | 1447.7 | 1456.4 | 1463.6 | 1469.2 | 1463.6 |
| 155°   | 1492.1 | 1496.2 | 1500.7 | 1508.0 | 1503.3 |
| 157.5° | 1530.4 | 1533.5 | 1536.0 | 1546.2 | 1539.1 |
| 160°   | 1564.6 | 1567.6 | 1569.1 | 1577.8 | 1571.7 |
| 162.5° | 1596.2 | 1596.2 | 1597.7 | 1607.4 | 1600.3 |
| 165°   | 1623.2 | 1621.7 | 1621.7 | 1631.9 | 1624.8 |
| 167.5° | 1647.7 | 1643.2 | 1643.2 | 1653.3 | 1646.2 |
| 170°   | 1666.1 | 1662.0 | 1660.5 | 1670.6 | 1662.0 |
| 172.5° | 1678.8 | 1674.7 | 1673.2 | 1683.4 | 1674.7 |
| 175°   | 1689.0 | 1685.0 | 1681.9 | 1692.1 | 1683.4 |
| 177.5° | 1694.6 | 1690.6 | 1687.5 | 1696.1 | 1687.5 |
| 180°   | 1692.1 | 1692.1 | 1692.1 | 1692.1 | 1692.1 |

TEST NUMBER: P923070

CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US940-RLFL

**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 | 9.49             | 10.34 | 10.42 | 11.29 | 12.52 | 5.45           | 6.30 | 6.39  | 7.25  | 8.48  |
|                 | 3H   | 11.17            | 11.93 | 12.12 | 12.89 | 14.15 | 6.64           | 7.40 | 7.59  | 8.36  | 9.62  |
|                 | 4H   | 11.78            | 12.50 | 12.75 | 13.47 | 14.73 | 7.09           | 7.81 | 8.05  | 8.78  | 10.04 |
|                 | 6H   | 12.21            | 12.87 | 13.18 | 13.84 | 15.12 | 7.41           | 8.08 | 8.39  | 9.05  | 10.32 |
|                 | 8H   | 12.34            | 12.97 | 13.32 | 13.96 | 15.23 | 7.50           | 8.14 | 8.49  | 9.12  | 10.40 |
|                 | 12H  | 12.40            | 13.00 | 13.39 | 13.98 | 15.28 | 7.55           | 8.15 | 8.54  | 9.13  | 10.43 |
| 4H              | 2H   | 9.51             | 10.23 | 10.48 | 11.19 | 12.46 | 6.05           | 6.77 | 7.02  | 7.73  | 9.00  |
|                 | 3H   | 11.34            | 11.94 | 12.32 | 12.94 | 14.22 | 7.40           | 8.00 | 8.38  | 9.00  | 10.27 |
|                 | 4H   | 12.04            | 12.59 | 13.03 | 13.58 | 14.88 | 7.95           | 8.50 | 8.94  | 9.49  | 10.79 |
|                 | 6H   | 12.56            | 13.03 | 13.56 | 14.04 | 15.34 | 8.37           | 8.84 | 9.37  | 9.85  | 11.15 |
|                 | 8H   | 12.74            | 13.18 | 13.74 | 14.18 | 15.50 | 8.50           | 8.94 | 9.50  | 9.95  | 11.26 |
|                 | 12H  | 12.84            | 13.23 | 13.86 | 14.25 | 15.57 | 8.57           | 8.96 | 9.59  | 9.99  | 11.30 |
| 8H              | 4H   | 12.01            | 12.45 | 13.01 | 13.45 | 14.77 | 8.23           | 8.67 | 9.24  | 9.68  | 10.99 |
|                 | 6H   | 12.58            | 12.94 | 13.61 | 13.99 | 15.30 | 8.76           | 9.12 | 9.78  | 10.16 | 11.48 |
|                 | 8H   | 12.80            | 13.12 | 13.84 | 14.15 | 15.49 | 8.95           | 9.27 | 9.98  | 10.30 | 11.63 |
|                 | 12H  | 12.94            | 13.23 | 13.98 | 14.25 | 15.63 | 9.07           | 9.35 | 10.11 | 10.38 | 11.75 |
| 12H             | 4H   | 11.96            | 12.36 | 12.98 | 13.38 | 14.70 | 8.24           | 8.64 | 9.26  | 9.66  | 10.98 |
|                 | 6H   | 12.56            | 12.88 | 13.59 | 13.91 | 15.24 | 8.81           | 9.13 | 9.84  | 10.16 | 11.49 |
|                 | 8H   | 12.78            | 13.06 | 13.82 | 14.09 | 15.47 | 9.02           | 9.30 | 10.06 | 10.33 | 11.70 |