

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: P925456

Luminaire Tested: DFN2DIP-SQ3F0-040D090US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925456  
REPORT IS A COMBINATION OF REPORTS P899951 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D090US950-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

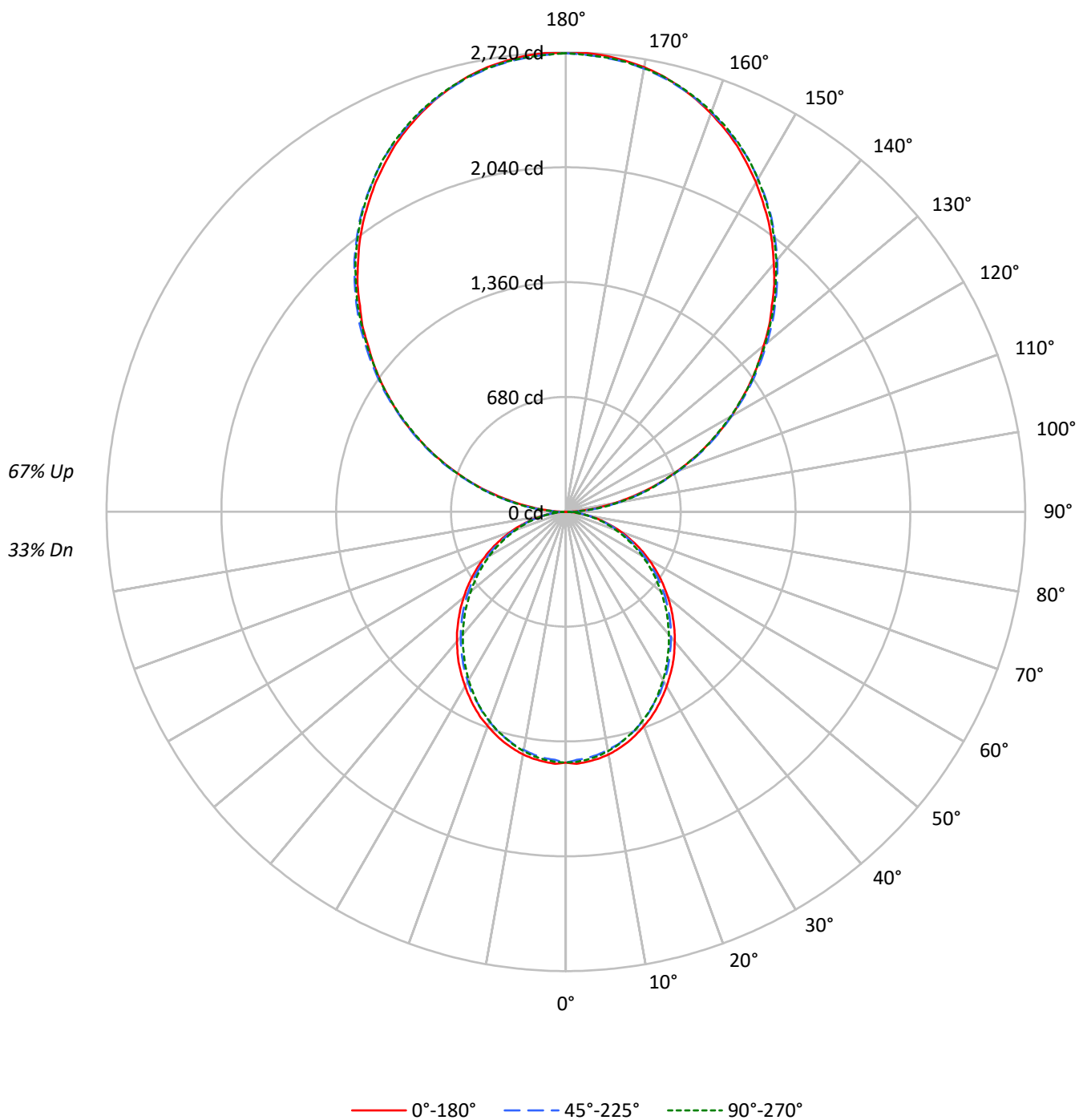
Lumens per Lamp: N/A  
Luminaire Lumens: 11376.4 lumens  
Efficiency: N/A  
Efficacy: 112.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 100.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-FLLFLL

**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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 57 | 57 | 57 | 41 | 41 | 41 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 78  | 72  | 67  | 77 | 71 | 66 | 62 | 57 | 53 | 50 | 44 | 41 | 39 | 32 | 30 | 29 |
| 3   | 78  | 69  | 62  | 56  | 70 | 62 | 56 | 51 | 50 | 46 | 42 | 39 | 36 | 33 | 28 | 26 | 25 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 49 | 43 | 44 | 40 | 36 | 34 | 31 | 28 | 25 | 23 | 21 |
| 5   | 65  | 54  | 46  | 40  | 59 | 49 | 42 | 37 | 40 | 35 | 31 | 31 | 27 | 25 | 23 | 20 | 18 |
| 6   | 60  | 48  | 41  | 35  | 54 | 44 | 37 | 32 | 36 | 31 | 27 | 28 | 24 | 21 | 20 | 18 | 16 |
| 7   | 56  | 44  | 36  | 30  | 50 | 40 | 33 | 28 | 32 | 27 | 23 | 25 | 22 | 19 | 19 | 16 | 14 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 23 | 19 | 17 | 17 | 15 | 13 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 27 | 22 | 18 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 19 | 16 | 14 | 15 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1701 | 1701 | 1701 |
| 5°  | 1703 | 1676 | 1688 |
| 10° | 1688 | 1653 | 1665 |
| 15° | 1662 | 1624 | 1629 |
| 20° | 1628 | 1585 | 1592 |
| 25° | 1593 | 1539 | 1549 |
| 30° | 1550 | 1496 | 1494 |
| 35° | 1509 | 1445 | 1437 |
| 40° | 1459 | 1394 | 1382 |
| 45° | 1409 | 1342 | 1326 |
| 50° | 1355 | 1288 | 1261 |
| 55° | 1297 | 1226 | 1202 |
| 60° | 1232 | 1151 | 1134 |
| 65° | 1162 | 1074 | 1053 |
| 70° | 1071 | 981  | 966  |
| 75° | 946  | 868  | 885  |
| 80° | 795  | 724  | 732  |
| 85° | 560  | 479  | 479  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2732 cd/sqm

TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 139.8   | 1.2       |
| 10°-20°   | 393.2   | 3.5       |
| 20°-30°   | 577.9   | 5.1       |
| 30°-40°   | 671.2   | 5.9       |
| 40°-50°   | 670.3   | 5.9       |
| 50°-60°   | 584.5   | 5.1       |
| 60°-70°   | 432.1   | 3.8       |
| 70°-80°   | 244.5   | 2.1       |
| 80°-90°   | 72.2    | 0.6       |
| 90°-100°  | 168.0   | 1.5       |
| 100°-110° | 533.9   | 4.7       |
| 110°-120° | 913.7   | 8.0       |
| 120°-130° | 1201.6  | 10.6      |
| 130°-140° | 1348.7  | 11.9      |
| 140°-150° | 1322.6  | 11.6      |
| 150°-160° | 1109.5  | 9.8       |
| 160°-170° | 735.8   | 6.5       |
| 170°-180° | 257.2   | 2.3       |
| 0°-30°    | 1110.8  | 9.8       |
| 0°-40°    | 1782.0  | 15.7      |
| 0°-60°    | 3036.8  | 26.7      |
| 0°-90°    | 3785.5  | 33.3      |
| 90°-120°  | 1615.6  | 14.2      |
| 90°-150°  | 5488.5  | 48.2      |
| 90°-180°  | 7591.0  | 66.7      |
| 0°-180°   | 11376.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1485 | 1485  | 1485 | 1485  | 1485 |      |
| 5°   | 1485 | 1479  | 1463 | 1475  | 1472 | 141  |
| 15°  | 1413 | 1405  | 1386 | 1392  | 1385 | 398  |
| 25°  | 1279 | 1268  | 1244 | 1246  | 1244 | 589  |
| 35°  | 1104 | 1090  | 1067 | 1058  | 1051 | 689  |
| 45°  | 898  | 888   | 867  | 851   | 845  | 693  |
| 55°  | 680  | 671   | 654  | 637   | 630  | 608  |
| 65°  | 458  | 450   | 436  | 423   | 416  | 453  |
| 75°  | 240  | 237   | 230  | 221   | 224  | 256  |
| 85°  | 58   | 57    | 56   | 51    | 50   | 65   |
| 90°  | 2    | 30    | 80   | 75    | 78   | 11   |
| 95°  | 120  | 142   | 146  | 146   | 142  | 133  |
| 105° | 493  | 499   | 504  | 508   | 508  | 520  |
| 115° | 917  | 930   | 926  | 924   | 917  | 907  |
| 125° | 1334 | 1354  | 1348 | 1340  | 1338 | 1192 |
| 135° | 1725 | 1750  | 1755 | 1753  | 1746 | 1333 |
| 145° | 2094 | 2110  | 2124 | 2126  | 2117 | 1308 |
| 155° | 2394 | 2401  | 2408 | 2420  | 2413 | 1102 |
| 165° | 2605 | 2602  | 2602 | 2619  | 2607 | 735  |
| 175° | 2710 | 2704  | 2699 | 2716  | 2702 | 258  |
| 180° | 2716 | 2716  | 2716 | 2716  | 2716 |      |

TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1484.8 | 1484.8 | 1484.8 | 1484.8 | 1484.8 |
| 2.5°   | 1493.5 | 1486.3 | 1470.6 | 1484.8 | 1482.1 |
| 5°     | 1484.8 | 1479.2 | 1463.4 | 1474.8 | 1472.1 |
| 7.5°   | 1474.8 | 1466.3 | 1450.6 | 1462.1 | 1459.2 |
| 10°    | 1459.2 | 1449.2 | 1432.1 | 1443.5 | 1439.2 |
| 12.5°  | 1437.7 | 1429.2 | 1412.1 | 1419.3 | 1416.3 |
| 15°    | 1413.4 | 1405.0 | 1386.4 | 1392.1 | 1385.0 |
| 17.5°  | 1383.5 | 1375.0 | 1356.4 | 1363.5 | 1356.4 |
| 20°    | 1350.6 | 1342.1 | 1322.1 | 1326.3 | 1320.8 |
| 22.5°  | 1317.9 | 1305.0 | 1286.4 | 1286.4 | 1283.5 |
| 25°    | 1279.2 | 1267.9 | 1243.6 | 1246.4 | 1243.6 |
| 27.5°  | 1236.4 | 1226.4 | 1208.0 | 1203.7 | 1196.6 |
| 30°    | 1193.6 | 1182.2 | 1160.8 | 1156.5 | 1150.8 |
| 32.5°  | 1147.9 | 1139.5 | 1116.6 | 1108.0 | 1102.2 |
| 35°    | 1103.7 | 1089.5 | 1066.6 | 1058.0 | 1050.8 |
| 37.5°  | 1053.7 | 1040.8 | 1017.9 | 1008.0 | 1000.8 |
| 40°    | 1002.4 | 990.8  | 967.9  | 955.2  | 949.5  |
| 42.5°  | 952.4  | 940.8  | 918.1  | 903.7  | 895.2  |
| 45°    | 898.1  | 888.2  | 866.6  | 851.1  | 845.2  |
| 47.5°  | 845.2  | 835.2  | 812.4  | 796.7  | 788.2  |
| 50°    | 789.5  | 782.4  | 762.4  | 742.4  | 735.2  |
| 52.5°  | 735.2  | 725.3  | 706.8  | 691.1  | 681.1  |
| 55°    | 679.7  | 671.0  | 654.0  | 636.8  | 629.7  |
| 57.5°  | 623.9  | 616.9  | 598.2  | 581.1  | 575.4  |
| 60°    | 568.2  | 562.6  | 542.6  | 526.9  | 522.6  |
| 62.5°  | 514.0  | 504.0  | 489.8  | 475.5  | 469.7  |
| 65°    | 458.4  | 449.7  | 435.5  | 422.6  | 415.6  |
| 67.5°  | 401.3  | 394.0  | 381.3  | 371.3  | 365.6  |
| 70°    | 348.4  | 342.7  | 329.8  | 319.8  | 314.2  |
| 72.5°  | 294.2  | 288.4  | 281.3  | 271.3  | 267.0  |
| 75°    | 239.8  | 237.1  | 229.8  | 221.3  | 224.2  |
| 77.5°  | 191.3  | 185.6  | 182.7  | 178.4  | 174.2  |
| 80°    | 142.8  | 141.3  | 138.4  | 134.2  | 131.4  |
| 82.5°  | 97.1   | 97.1   | 95.8   | 90.0   | 90.0   |
| 85°    | 58.5   | 57.1   | 55.7   | 51.3   | 50.0   |
| 87.5°  | 25.8   | 22.9   | 20.0   | 15.7   | 14.2   |
| 90°    | 2.5    | 29.5   | 80.2   | 75.3   | 77.8   |
| 92.5°  | 50.8   | 68.8   | 71.3   | 73.6   | 73.6   |
| 95°    | 119.5  | 142.4  | 146.5  | 146.5  | 142.4  |
| 97.5°  | 198.9  | 220.2  | 229.2  | 229.2  | 229.2  |
| 100°   | 290.6  | 309.5  | 316.0  | 316.0  | 313.6  |
| 102.5° | 387.2  | 401.2  | 410.1  | 412.6  | 410.1  |
| 105°   | 492.8  | 499.3  | 504.3  | 508.4  | 508.4  |
| 107.5° | 597.6  | 607.4  | 607.4  | 609.0  | 597.6  |
| 110°   | 699.1  | 712.3  | 712.3  | 712.3  | 705.7  |

TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 808.8  | 822.7  | 820.2  | 813.8  | 808.8  |
| 115°   | 916.9  | 930.0  | 925.9  | 923.5  | 916.9  |
| 117.5° | 1024.1 | 1042.1 | 1030.7 | 1024.1 | 1017.5 |
| 120°   | 1132.2 | 1150.1 | 1132.2 | 1132.2 | 1124.8 |
| 122.5° | 1230.4 | 1253.4 | 1241.9 | 1235.3 | 1230.4 |
| 125°   | 1333.6 | 1354.0 | 1347.5 | 1340.1 | 1337.7 |
| 127.5° | 1434.2 | 1459.6 | 1450.7 | 1440.8 | 1434.2 |
| 130°   | 1528.4 | 1557.9 | 1553.8 | 1548.8 | 1539.9 |
| 132.5° | 1634.0 | 1656.9 | 1658.5 | 1647.1 | 1640.6 |
| 135°   | 1724.8 | 1750.2 | 1755.2 | 1752.7 | 1746.2 |
| 137.5° | 1826.3 | 1846.8 | 1851.0 | 1849.3 | 1839.5 |
| 140°   | 1915.6 | 1936.0 | 1947.5 | 1947.5 | 1938.5 |
| 142.5° | 2007.3 | 2027.7 | 2034.3 | 2036.8 | 2027.7 |
| 145°   | 2094.1 | 2110.4 | 2123.5 | 2126.0 | 2117.0 |
| 147.5° | 2171.9 | 2192.3 | 2202.1 | 2206.2 | 2197.3 |
| 150°   | 2252.1 | 2266.0 | 2275.0 | 2282.3 | 2275.0 |
| 152.5° | 2323.3 | 2337.2 | 2348.7 | 2357.7 | 2348.7 |
| 155°   | 2394.5 | 2401.0 | 2408.5 | 2419.9 | 2412.6 |
| 157.5° | 2455.9 | 2460.8 | 2464.9 | 2481.3 | 2469.8 |
| 160°   | 2510.7 | 2515.7 | 2518.2 | 2532.0 | 2522.2 |
| 162.5° | 2561.5 | 2561.5 | 2564.0 | 2579.5 | 2568.1 |
| 165°   | 2604.9 | 2602.4 | 2602.4 | 2618.8 | 2607.4 |
| 167.5° | 2644.2 | 2636.9 | 2636.9 | 2653.2 | 2641.7 |
| 170°   | 2673.7 | 2667.1 | 2664.7 | 2681.0 | 2667.1 |
| 172.5° | 2694.1 | 2687.6 | 2685.1 | 2701.5 | 2687.6 |
| 175°   | 2710.5 | 2703.9 | 2699.1 | 2715.5 | 2701.5 |
| 177.5° | 2719.5 | 2713.0 | 2708.0 | 2722.0 | 2708.0 |
| 180°   | 2715.5 | 2715.5 | 2715.5 | 2715.5 | 2715.5 |

TEST NUMBER: P925456

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US950-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 | 7.30             | 8.03  | 8.38  | 9.11  | 10.60 | 6.85           | 7.58  | 7.94  | 8.67  | 10.16 |
|                 | 3H   | 8.94             | 9.60  | 10.04 | 10.69 | 12.20 | 8.45           | 9.10  | 9.55  | 10.20 | 11.71 |
|                 | 4H   | 9.52             | 10.14 | 10.63 | 11.24 | 12.75 | 9.03           | 9.65  | 10.13 | 10.74 | 12.26 |
|                 | 6H   | 9.91             | 10.48 | 11.03 | 11.58 | 13.11 | 9.41           | 9.98  | 10.53 | 11.08 | 12.61 |
|                 | 8H   | 10.01            | 10.55 | 11.13 | 11.67 | 13.19 | 9.51           | 10.05 | 10.63 | 11.17 | 12.69 |
|                 | 12H  | 10.05            | 10.57 | 11.18 | 11.68 | 13.22 | 9.54           | 10.06 | 10.67 | 11.17 | 12.71 |
| 4H              | 2H   | 7.74             | 8.36  | 8.85  | 9.45  | 10.97 | 7.38           | 8.00  | 8.50  | 9.10  | 10.61 |
|                 | 3H   | 9.59             | 10.10 | 10.71 | 11.23 | 12.75 | 9.18           | 9.69  | 10.30 | 10.82 | 12.35 |
|                 | 4H   | 10.29            | 10.77 | 11.42 | 11.88 | 13.43 | 9.87           | 10.34 | 10.99 | 11.45 | 13.00 |
|                 | 6H   | 10.79            | 11.20 | 11.93 | 12.34 | 13.88 | 10.36          | 10.77 | 11.49 | 11.90 | 13.44 |
|                 | 8H   | 10.94            | 11.32 | 12.07 | 12.45 | 14.00 | 10.50          | 10.88 | 11.63 | 12.01 | 13.56 |
|                 | 12H  | 11.00            | 11.35 | 12.15 | 12.49 | 14.05 | 10.55          | 10.90 | 11.70 | 12.04 | 13.60 |
| 8H              | 4H   | 10.47            | 10.85 | 11.60 | 11.98 | 13.54 | 10.09          | 10.48 | 11.23 | 11.60 | 13.16 |
|                 | 6H   | 11.09            | 11.41 | 12.24 | 12.58 | 14.13 | 10.71          | 11.02 | 11.86 | 12.19 | 13.74 |
|                 | 8H   | 11.31            | 11.58 | 12.47 | 12.73 | 14.30 | 10.91          | 11.19 | 12.07 | 12.34 | 13.91 |
|                 | 12H  | 11.43            | 11.67 | 12.59 | 12.82 | 14.42 | 11.02          | 11.26 | 12.18 | 12.41 | 14.01 |
| 12H             | 4H   | 10.45            | 10.80 | 11.60 | 11.94 | 13.50 | 10.08          | 10.43 | 11.23 | 11.57 | 13.13 |
|                 | 6H   | 11.12            | 11.39 | 12.28 | 12.54 | 14.12 | 10.75          | 11.02 | 11.90 | 12.17 | 13.74 |
|                 | 8H   | 11.35            | 11.59 | 12.51 | 12.74 | 14.35 | 10.97          | 11.21 | 12.13 | 12.36 | 13.96 |