

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: P926480

Luminaire Tested: DFN2DIP-TR4F0-070D050US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926480  
REPORT IS A COMBINATION OF REPORTS P900394 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D050US950-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

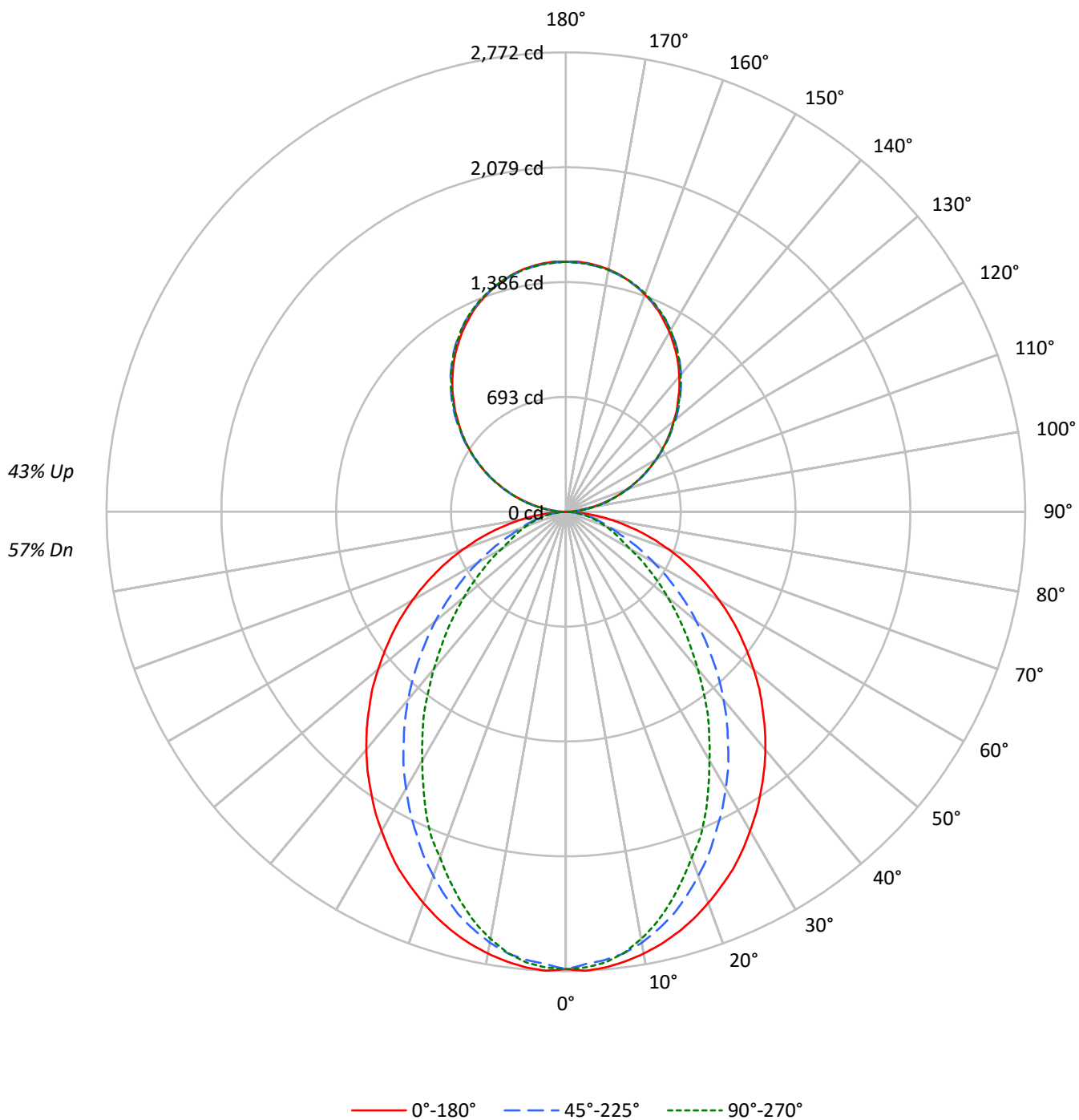
Lumens per Lamp: N/A  
Luminaire Lumens: 9897.7 lumens  
Efficiency: N/A  
Efficacy: 95.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 103.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P926480

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### Luminous Intensity Polar Plot



TEST NUMBER: P926480

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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°  | 2193 | 2193 | 2193 |
| 5°  | 2196 | 2158 | 2172 |
| 10° | 2174 | 2115 | 2101 |
| 15° | 2145 | 2045 | 1992 |
| 20° | 2105 | 1949 | 1857 |
| 25° | 2064 | 1841 | 1728 |
| 30° | 2010 | 1730 | 1564 |
| 35° | 1957 | 1611 | 1420 |
| 40° | 1902 | 1488 | 1254 |
| 45° | 1839 | 1351 | 1104 |
| 50° | 1774 | 1213 | 958  |
| 55° | 1706 | 1066 | 817  |
| 60° | 1627 | 911  | 673  |
| 65° | 1537 | 755  | 605  |
| 70° | 1427 | 608  | 547  |
| 75° | 1289 | 536  | 498  |
| 80° | 1089 | 450  | 432  |
| 85° | 759  | 300  | 324  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1839 cd/sqm

TEST NUMBER: P926480

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 258.7  | 2.6       |
| 10°-20°   | 710.1  | 7.2       |
| 20°-30°   | 997.0  | 10.1      |
| 30°-40°   | 1086.8 | 11.0      |
| 40°-50°   | 998.8  | 10.1      |
| 50°-60°   | 784.4  | 7.9       |
| 60°-70°   | 510.6  | 5.2       |
| 70°-80°   | 262.8  | 2.7       |
| 80°-90°   | 71.4   | 0.7       |
| 90°-100°  | 93.4   | 0.9       |
| 100°-110° | 296.6  | 3.0       |
| 110°-120° | 507.6  | 5.1       |
| 120°-130° | 667.5  | 6.7       |
| 130°-140° | 749.3  | 7.6       |
| 140°-150° | 734.8  | 7.4       |
| 150°-160° | 616.4  | 6.2       |
| 160°-170° | 408.8  | 4.1       |
| 170°-180° | 142.9  | 1.4       |
| 0°-30°    | 1965.7 | 19.9      |
| 0°-40°    | 3052.5 | 30.8      |
| 0°-60°    | 4835.8 | 48.9      |
| 0°-90°    | 5680.5 | 57.4      |
| 90°-120°  | 897.5  | 9.1       |
| 90°-150°  | 3049.2 | 30.8      |
| 90°-180°  | 4217.0 | 42.6      |
| 0°-180°   | 9897.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2760 | 2760  | 2760 | 2760  | 2760 |      |
| 5°   | 2760 | 2748  | 2715 | 2738  | 2730 | 262  |
| 15°  | 2625 | 2598  | 2513 | 2465  | 2440 | 740  |
| 25°  | 2383 | 2303  | 2138 | 2036  | 1998 | 1096 |
| 35°  | 2053 | 1926  | 1706 | 1549  | 1494 | 1285 |
| 45°  | 1679 | 1511  | 1249 | 1071  | 1012 | 1296 |
| 55°  | 1276 | 1082  | 812  | 662   | 615  | 1140 |
| 65°  | 862  | 659   | 435  | 350   | 342  | 854  |
| 75°  | 460  | 285   | 200  | 182   | 180  | 486  |
| 85°  | 107  | 55    | 47   | 47    | 47   | 123  |
| 90°  | 1    | 16    | 45   | 42    | 43   | 10   |
| 95°  | 66   | 79    | 81   | 81    | 79   | 74   |
| 105° | 274  | 277   | 280  | 282   | 282  | 289  |
| 115° | 509  | 517   | 514  | 513   | 509  | 504  |
| 125° | 741  | 752   | 749  | 744   | 743  | 662  |
| 135° | 958  | 972   | 975  | 974   | 970  | 741  |
| 145° | 1163 | 1172  | 1180 | 1181  | 1176 | 727  |
| 155° | 1330 | 1334  | 1338 | 1344  | 1340 | 612  |
| 165° | 1447 | 1446  | 1446 | 1455  | 1449 | 408  |
| 175° | 1506 | 1502  | 1500 | 1509  | 1501 | 143  |
| 180° | 1509 | 1509  | 1509 | 1509  | 1509 |      |

TEST NUMBER: P926480

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2760.0 | 2760.0 | 2760.0 | 2760.0 | 2760.0 |
| 2.5°   | 2772.4 | 2760.0 | 2732.4 | 2757.6 | 2752.6 |
| 5°     | 2760.0 | 2747.5 | 2715.0 | 2737.5 | 2730.1 |
| 7.5°   | 2737.5 | 2722.6 | 2687.7 | 2697.4 | 2685.0 |
| 10°    | 2707.5 | 2690.1 | 2640.2 | 2632.6 | 2617.7 |
| 12.5°  | 2670.2 | 2647.6 | 2580.1 | 2565.2 | 2537.6 |
| 15°    | 2625.1 | 2597.6 | 2512.7 | 2465.3 | 2440.4 |
| 17.5°  | 2572.7 | 2532.7 | 2427.7 | 2372.8 | 2332.8 |
| 20°    | 2512.7 | 2462.7 | 2337.9 | 2275.6 | 2220.4 |
| 22.5°  | 2447.9 | 2390.3 | 2245.3 | 2160.5 | 2123.2 |
| 25°    | 2382.9 | 2302.9 | 2138.0 | 2035.7 | 1998.2 |
| 27.5°  | 2305.5 | 2220.4 | 2038.1 | 1920.8 | 1863.3 |
| 30°    | 2223.1 | 2128.0 | 1928.1 | 1801.0 | 1733.4 |
| 32.5°  | 2143.1 | 2028.1 | 1823.5 | 1673.5 | 1610.9 |
| 35°    | 2053.2 | 1925.7 | 1706.1 | 1548.7 | 1493.6 |
| 37.5°  | 1965.8 | 1828.2 | 1596.1 | 1423.6 | 1361.4 |
| 40°    | 1873.3 | 1723.6 | 1481.1 | 1303.8 | 1238.9 |
| 42.5°  | 1778.4 | 1618.7 | 1366.3 | 1181.3 | 1119.1 |
| 45°    | 1678.6 | 1511.0 | 1249.0 | 1071.4 | 1011.5 |
| 47.5°  | 1583.6 | 1406.4 | 1136.6 | 959.1  | 904.2  |
| 50°    | 1478.7 | 1301.4 | 1026.6 | 854.1  | 801.9  |
| 52.5°  | 1376.1 | 1188.8 | 921.7  | 756.8  | 709.4  |
| 55°    | 1276.3 | 1081.5 | 811.7  | 662.0  | 614.6  |
| 57.5°  | 1174.0 | 974.1  | 714.5  | 574.5  | 534.5  |
| 60°    | 1069.1 | 869.2  | 611.9  | 484.7  | 444.7  |
| 62.5°  | 966.7  | 766.9  | 524.4  | 404.7  | 384.7  |
| 65°    | 861.7  | 659.3  | 434.6  | 349.8  | 342.1  |
| 67.5°  | 761.9  | 559.4  | 349.8  | 307.1  | 299.7  |
| 70°    | 656.9  | 462.1  | 289.6  | 264.7  | 254.6  |
| 72.5°  | 557.0  | 372.1  | 242.2  | 222.4  | 217.3  |
| 75°    | 459.5  | 284.6  | 199.8  | 182.3  | 179.9  |
| 77.5°  | 362.2  | 202.2  | 157.4  | 147.3  | 142.3  |
| 80°    | 272.2  | 144.9  | 119.8  | 110.0  | 110.0  |
| 82.5°  | 189.8  | 97.5   | 82.4   | 77.4   | 77.4   |
| 85°    | 107.3  | 54.9   | 47.4   | 47.4   | 47.4   |
| 87.5°  | 40.0   | 19.8   | 19.8   | 17.5   | 17.5   |
| 90°    | 1.3    | 16.4   | 44.6   | 41.9   | 43.2   |
| 92.5°  | 28.2   | 38.2   | 39.6   | 40.9   | 40.9   |
| 95°    | 66.4   | 79.2   | 81.4   | 81.4   | 79.2   |
| 97.5°  | 110.5  | 122.3  | 127.4  | 127.4  | 127.4  |
| 100°   | 161.4  | 171.9  | 175.5  | 175.5  | 174.2  |
| 102.5° | 215.1  | 222.9  | 227.8  | 229.2  | 227.8  |
| 105°   | 273.8  | 277.4  | 280.2  | 282.4  | 282.4  |
| 107.5° | 332.0  | 337.4  | 337.4  | 338.4  | 332.0  |
| 110°   | 388.4  | 395.7  | 395.7  | 395.7  | 392.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 449.3  | 457.1  | 455.7  | 452.1  | 449.3  |
| 115°   | 509.3  | 516.7  | 514.4  | 513.1  | 509.3  |
| 117.5° | 569.0  | 579.0  | 572.6  | 569.0  | 565.3  |
| 120°   | 629.0  | 639.0  | 629.0  | 629.0  | 624.9  |
| 122.5° | 683.5  | 696.3  | 689.9  | 686.3  | 683.5  |
| 125°   | 740.9  | 752.2  | 748.6  | 744.5  | 743.2  |
| 127.5° | 796.8  | 810.9  | 805.9  | 800.4  | 796.8  |
| 130°   | 849.2  | 865.5  | 863.2  | 860.5  | 855.5  |
| 132.5° | 907.8  | 920.5  | 921.5  | 915.1  | 911.5  |
| 135°   | 958.3  | 972.3  | 975.1  | 973.7  | 970.1  |
| 137.5° | 1014.7 | 1026.0 | 1028.3 | 1027.4 | 1021.9 |
| 140°   | 1064.2 | 1075.6 | 1081.9 | 1081.9 | 1077.0 |
| 142.5° | 1115.1 | 1126.6 | 1130.2 | 1131.5 | 1126.6 |
| 145°   | 1163.4 | 1172.5 | 1179.7 | 1181.1 | 1176.1 |
| 147.5° | 1206.6 | 1218.0 | 1223.4 | 1225.7 | 1220.6 |
| 150°   | 1251.2 | 1258.9 | 1263.9 | 1268.0 | 1263.9 |
| 152.5° | 1290.8 | 1298.5 | 1304.8 | 1309.8 | 1304.8 |
| 155°   | 1330.3 | 1333.9 | 1338.0 | 1344.4 | 1340.3 |
| 157.5° | 1364.4 | 1367.1 | 1369.4 | 1378.5 | 1372.1 |
| 160°   | 1394.8 | 1397.6 | 1398.9 | 1406.7 | 1401.2 |
| 162.5° | 1423.1 | 1423.1 | 1424.4 | 1433.1 | 1426.7 |
| 165°   | 1447.2 | 1445.8 | 1445.8 | 1454.9 | 1448.6 |
| 167.5° | 1469.0 | 1464.9 | 1464.9 | 1474.0 | 1467.6 |
| 170°   | 1485.4 | 1481.8 | 1480.4 | 1489.5 | 1481.8 |
| 172.5° | 1496.7 | 1493.1 | 1491.8 | 1500.8 | 1493.1 |
| 175°   | 1505.9 | 1502.2 | 1499.5 | 1508.6 | 1500.8 |
| 177.5° | 1510.8 | 1507.2 | 1504.5 | 1512.2 | 1504.5 |
| 180°   | 1508.6 | 1508.6 | 1508.6 | 1508.6 | 1508.6 |

TEST NUMBER: P926480

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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 | 10.53            | 11.43 | 11.43 | 12.34 | 13.50 | 6.51           | 7.40  | 7.40  | 8.31  | 9.48  |
|                 | 3H   | 12.21            | 13.01 | 13.12 | 13.94 | 15.13 | 7.70           | 8.50  | 8.61  | 9.42  | 10.61 |
|                 | 4H   | 12.83            | 13.58 | 13.75 | 14.51 | 15.71 | 8.15           | 8.91  | 9.08  | 9.84  | 11.04 |
|                 | 6H   | 13.25            | 13.95 | 14.19 | 14.88 | 16.09 | 8.48           | 9.17  | 9.42  | 10.11 | 11.32 |
|                 | 8H   | 13.38            | 14.04 | 14.32 | 14.99 | 16.20 | 8.57           | 9.23  | 9.52  | 10.18 | 11.39 |
|                 | 12H  | 13.44            | 14.07 | 14.39 | 15.02 | 16.25 | 8.62           | 9.25  | 9.57  | 10.19 | 11.43 |
| 4H              | 2H   | 10.56            | 11.31 | 11.49 | 12.24 | 13.44 | 7.11           | 7.86  | 8.04  | 8.79  | 9.99  |
|                 | 3H   | 12.39            | 13.02 | 13.33 | 13.98 | 15.19 | 8.47           | 9.09  | 9.41  | 10.05 | 11.26 |
|                 | 4H   | 13.09            | 13.66 | 14.04 | 14.61 | 15.85 | 9.02           | 9.59  | 9.97  | 10.54 | 11.78 |
|                 | 6H   | 13.61            | 14.10 | 14.57 | 15.07 | 16.31 | 9.44           | 9.93  | 10.40 | 10.91 | 12.15 |
|                 | 8H   | 13.78            | 14.24 | 14.75 | 15.21 | 16.46 | 9.57           | 10.03 | 10.54 | 11.00 | 12.25 |
|                 | 12H  | 13.88            | 14.29 | 14.86 | 15.28 | 16.54 | 9.64           | 10.05 | 10.62 | 11.04 | 12.30 |
| 8H              | 4H   | 13.06            | 13.52 | 14.03 | 14.49 | 15.74 | 9.30           | 9.76  | 10.27 | 10.73 | 11.98 |
|                 | 6H   | 13.63            | 14.01 | 14.62 | 15.02 | 16.27 | 9.82           | 10.20 | 10.81 | 11.21 | 12.47 |
|                 | 8H   | 13.85            | 14.18 | 14.85 | 15.18 | 16.45 | 10.02          | 10.35 | 11.02 | 11.35 | 12.62 |
|                 | 12H  | 13.99            | 14.28 | 14.99 | 15.28 | 16.59 | 10.14          | 10.43 | 11.14 | 11.43 | 12.74 |
| 12H             | 4H   | 13.02            | 13.43 | 14.00 | 14.42 | 15.67 | 9.31           | 9.72  | 10.29 | 10.71 | 11.97 |
|                 | 6H   | 13.60            | 13.94 | 14.60 | 14.94 | 16.21 | 9.87           | 10.21 | 10.87 | 11.21 | 12.48 |
|                 | 8H   | 13.83            | 14.12 | 14.83 | 15.12 | 16.43 | 10.09          | 10.38 | 11.09 | 11.38 | 12.69 |