

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: P918119

Luminaire Tested: DFN2DIP-TR3F0-070D060US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918119  
REPORT IS A COMBINATION OF REPORTS P901842 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D060US930-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

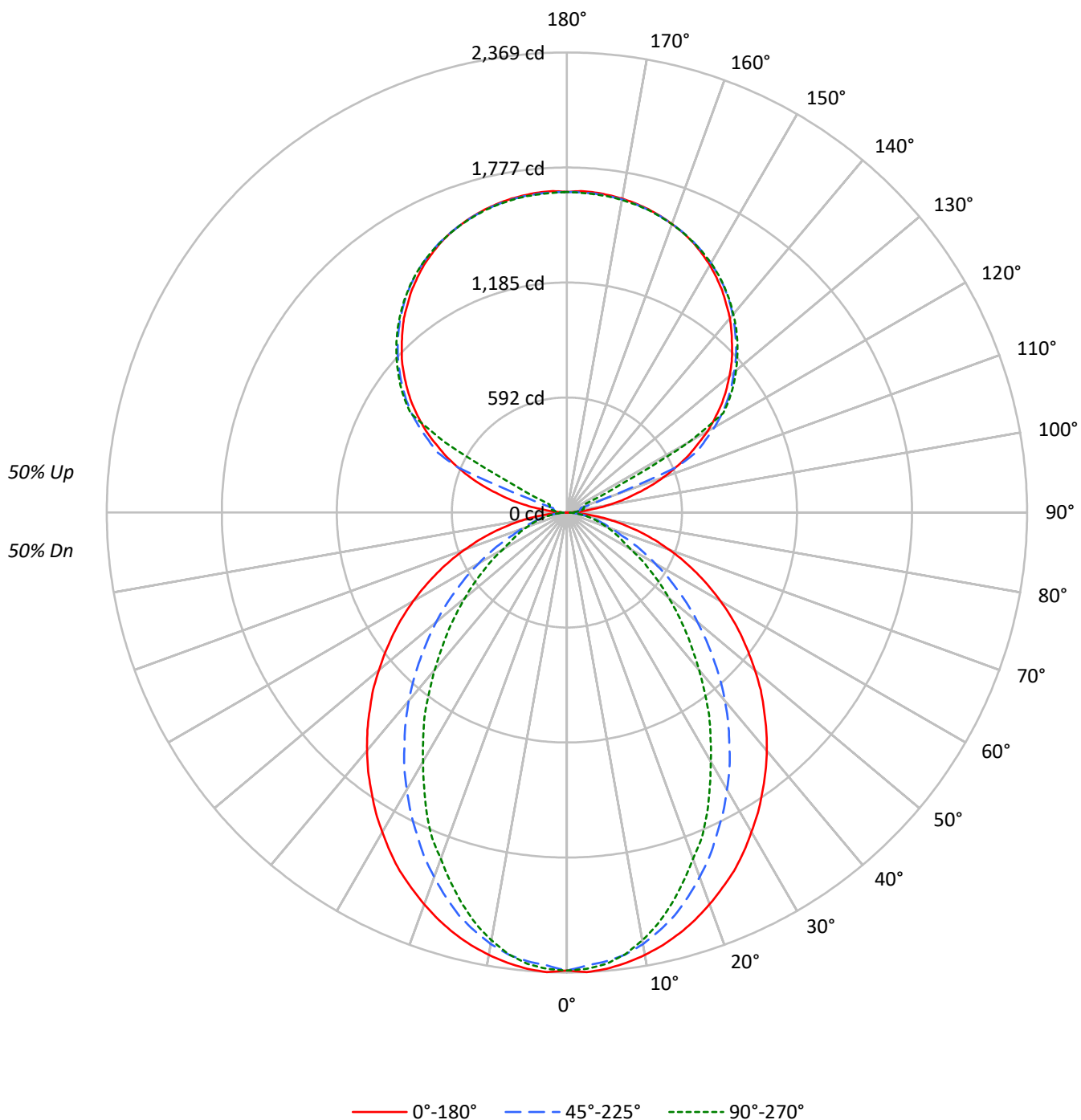
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9693.9 lumens  
Efficiency: N/A  
Efficacy: 84.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 115.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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



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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 94  | 90  | 87  | 91 | 87 | 84 | 81 | 74 | 72 | 69 | 62 | 60 | 59 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 67 | 65 | 62 | 58 | 55 | 52 | 50 | 45 | 43 | 41 |
| 3   | 82  | 73  | 66  | 60  | 76 | 68 | 62 | 57 | 58 | 53 | 50 | 49 | 45 | 43 | 40 | 38 | 36 |
| 4   | 76  | 65  | 57  | 52  | 70 | 60 | 54 | 49 | 52 | 47 | 43 | 44 | 40 | 37 | 36 | 34 | 31 |
| 5   | 70  | 58  | 50  | 45  | 64 | 54 | 47 | 42 | 47 | 41 | 37 | 40 | 35 | 32 | 33 | 30 | 28 |
| 6   | 64  | 52  | 45  | 39  | 59 | 49 | 42 | 37 | 42 | 37 | 33 | 36 | 32 | 29 | 30 | 27 | 25 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 33 | 29 | 25 | 28 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 52  | 40  | 32  | 27  | 48 | 37 | 30 | 26 | 32 | 27 | 23 | 28 | 24 | 21 | 24 | 20 | 18 |
| 10  | 48  | 36  | 29  | 25  | 45 | 34 | 28 | 23 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2939 | 2939 | 2939 |
| 5°  | 2942 | 2890 | 2909 |
| 10° | 2912 | 2831 | 2813 |
| 15° | 2870 | 2735 | 2664 |
| 20° | 2815 | 2604 | 2483 |
| 25° | 2759 | 2457 | 2308 |
| 30° | 2685 | 2307 | 2087 |
| 35° | 2611 | 2146 | 1893 |
| 40° | 2537 | 1979 | 1671 |
| 45° | 2450 | 1794 | 1470 |
| 50° | 2361 | 1608 | 1273 |
| 55° | 2267 | 1410 | 1084 |
| 60° | 2159 | 1203 | 891  |
| 65° | 2034 | 992  | 799  |
| 70° | 1882 | 796  | 720  |
| 75° | 1691 | 696  | 652  |
| 80° | 1415 | 577  | 559  |
| 85° | 963  | 373  | 408  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2450 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 221.1  | 2.3       |
| 10°-20°   | 606.9  | 6.3       |
| 20°-30°   | 852.0  | 8.8       |
| 30°-40°   | 928.8  | 9.6       |
| 40°-50°   | 853.6  | 8.8       |
| 50°-60°   | 670.4  | 6.9       |
| 60°-70°   | 436.4  | 4.5       |
| 70°-80°   | 224.6  | 2.3       |
| 80°-90°   | 60.2   | 0.6       |
| 90°-100°  | 54.4   | 0.6       |
| 100°-110° | 202.9  | 2.1       |
| 110°-120° | 538.2  | 5.6       |
| 120°-130° | 892.7  | 9.2       |
| 130°-140° | 948.2  | 9.8       |
| 140°-150° | 881.3  | 9.1       |
| 150°-160° | 708.5  | 7.3       |
| 160°-170° | 456.5  | 4.7       |
| 170°-180° | 157.1  | 1.6       |
| 0°-30°    | 1679.9 | 17.3      |
| 0°-40°    | 2608.7 | 26.9      |
| 0°-60°    | 4132.7 | 42.6      |
| 0°-90°    | 4853.9 | 50.1      |
| 90°-120°  | 795.6  | 8.2       |
| 90°-150°  | 3517.8 | 36.3      |
| 90°-180°  | 4840.0 | 49.9      |
| 0°-180°   | 9693.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2359 | 2359  | 2359 | 2359  | 2359 |      |
| 5°   | 2359 | 2348  | 2320 | 2340  | 2333 | 224  |
| 15°  | 2244 | 2220  | 2147 | 2107  | 2086 | 632  |
| 25°  | 2036 | 1968  | 1827 | 1740  | 1708 | 937  |
| 35°  | 1755 | 1646  | 1458 | 1324  | 1276 | 1098 |
| 45°  | 1434 | 1291  | 1067 | 916   | 864  | 1108 |
| 55°  | 1091 | 924   | 694  | 566   | 525  | 975  |
| 65°  | 736  | 564   | 371  | 299   | 292  | 730  |
| 75°  | 393  | 243   | 171  | 156   | 154  | 415  |
| 85°  | 92   | 47    | 40   | 40    | 40   | 105  |
| 90°  | 1    | 14    | 24   | 30    | 32   | 9    |
| 95°  | 78   | 38    | 47   | 53    | 51   | 92   |
| 105° | 363  | 399   | 73   | 86    | 91   | 388  |
| 115° | 687  | 707   | 737  | 184   | 98   | 676  |
| 125° | 971  | 987   | 1009 | 1018  | 1021 | 866  |
| 135° | 1202 | 1221  | 1232 | 1244  | 1241 | 928  |
| 145° | 1394 | 1393  | 1413 | 1422  | 1416 | 872  |
| 155° | 1535 | 1524  | 1539 | 1546  | 1536 | 707  |
| 165° | 1618 | 1610  | 1614 | 1622  | 1614 | 457  |
| 175° | 1654 | 1646  | 1648 | 1657  | 1645 | 157  |
| 180° | 1651 | 1651  | 1651 | 1651  | 1651 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2358.7 | 2358.7 | 2358.7 | 2358.7 | 2358.7 |
| 2.5°   | 2369.3 | 2358.7 | 2335.2 | 2356.7 | 2352.4 |
| 5°     | 2358.7 | 2348.1 | 2320.3 | 2339.5 | 2333.1 |
| 7.5°   | 2339.5 | 2326.8 | 2296.9 | 2305.3 | 2294.7 |
| 10°    | 2313.9 | 2299.0 | 2256.3 | 2249.8 | 2237.1 |
| 12.5°  | 2281.9 | 2262.7 | 2205.0 | 2192.3 | 2168.7 |
| 15°    | 2243.5 | 2219.9 | 2147.4 | 2106.9 | 2085.6 |
| 17.5°  | 2198.6 | 2164.5 | 2074.8 | 2027.8 | 1993.6 |
| 20°    | 2147.4 | 2104.6 | 1998.0 | 1944.7 | 1897.6 |
| 22.5°  | 2092.0 | 2042.8 | 1918.9 | 1846.4 | 1814.5 |
| 25°    | 2036.5 | 1968.0 | 1827.2 | 1739.8 | 1707.6 |
| 27.5°  | 1970.3 | 1897.6 | 1741.8 | 1641.5 | 1592.4 |
| 30°    | 1899.9 | 1818.6 | 1647.8 | 1539.1 | 1481.4 |
| 32.5°  | 1831.5 | 1733.2 | 1558.4 | 1430.2 | 1376.7 |
| 35°    | 1754.7 | 1645.8 | 1458.1 | 1323.6 | 1276.4 |
| 37.5°  | 1680.0 | 1562.4 | 1364.1 | 1216.6 | 1163.4 |
| 40°    | 1600.9 | 1473.0 | 1265.8 | 1114.3 | 1058.7 |
| 42.5°  | 1519.9 | 1383.3 | 1167.7 | 1009.6 | 956.4  |
| 45°    | 1434.5 | 1291.4 | 1067.4 | 915.7  | 864.5  |
| 47.5°  | 1353.4 | 1201.9 | 971.3  | 819.6  | 772.7  |
| 50°    | 1263.7 | 1112.2 | 877.3  | 729.9  | 685.3  |
| 52.5°  | 1176.1 | 1015.9 | 787.7  | 646.8  | 606.3  |
| 55°    | 1090.7 | 924.2  | 693.7  | 565.7  | 525.2  |
| 57.5°  | 1003.3 | 832.5  | 610.6  | 491.0  | 456.8  |
| 60°    | 913.6  | 742.8  | 522.9  | 414.3  | 380.0  |
| 62.5°  | 826.1  | 655.4  | 448.2  | 345.8  | 328.8  |
| 65°    | 736.5  | 563.5  | 371.4  | 299.0  | 292.4  |
| 67.5°  | 651.1  | 478.1  | 299.0  | 262.4  | 256.2  |
| 70°    | 561.4  | 394.9  | 247.5  | 226.2  | 217.6  |
| 72.5°  | 476.1  | 318.0  | 207.0  | 190.0  | 185.7  |
| 75°    | 392.7  | 243.2  | 170.7  | 155.8  | 153.8  |
| 77.5°  | 309.6  | 172.8  | 134.5  | 125.9  | 121.6  |
| 80°    | 232.6  | 123.8  | 102.4  | 94.0   | 94.0   |
| 82.5°  | 162.2  | 83.3   | 70.4   | 66.1   | 66.1   |
| 85°    | 91.7   | 46.9   | 40.5   | 40.5   | 40.5   |
| 87.5°  | 34.2   | 17.0   | 17.0   | 14.9   | 14.9   |
| 90°    | 1.1    | 14.3   | 23.8   | 29.9   | 32.2   |
| 92.5°  | 29.9   | 25.1   | 28.6   | 31.1   | 32.2   |
| 95°    | 77.6   | 38.2   | 46.6   | 52.7   | 51.4   |
| 97.5°  | 139.7  | 41.8   | 60.8   | 64.6   | 65.7   |
| 100°   | 211.5  | 47.8   | 68.1   | 77.6   | 80.0   |
| 102.5° | 290.2  | 288.0  | 70.5   | 83.6   | 87.2   |
| 105°   | 363.1  | 399.0  | 72.9   | 85.9   | 90.8   |
| 107.5° | 448.0  | 477.8  | 75.3   | 88.4   | 93.2   |
| 110°   | 529.3  | 554.2  | 209.1  | 89.7   | 94.3   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 605.7  | 627.1  | 606.8  | 91.9   | 95.6   |
| 115°   | 686.9  | 707.2  | 737.1  | 184.0  | 98.0   |
| 117.5° | 757.3  | 781.2  | 801.6  | 630.7  | 317.7  |
| 120°   | 836.3  | 854.1  | 875.7  | 890.0  | 728.7  |
| 122.5° | 903.0  | 922.2  | 946.2  | 953.2  | 954.6  |
| 125°   | 971.2  | 986.8  | 1009.4 | 1017.8 | 1021.3 |
| 127.5° | 1033.3 | 1050.0 | 1068.0 | 1079.9 | 1081.1 |
| 130°   | 1091.8 | 1111.0 | 1124.1 | 1137.3 | 1136.1 |
| 132.5° | 1151.6 | 1167.2 | 1180.2 | 1191.0 | 1189.8 |
| 135°   | 1201.8 | 1221.0 | 1231.6 | 1243.7 | 1241.2 |
| 137.5° | 1254.3 | 1268.6 | 1280.7 | 1292.6 | 1289.1 |
| 140°   | 1305.6 | 1315.3 | 1328.4 | 1339.1 | 1333.2 |
| 142.5° | 1348.7 | 1357.1 | 1372.6 | 1382.1 | 1376.1 |
| 145°   | 1394.2 | 1392.9 | 1413.2 | 1421.6 | 1415.6 |
| 147.5° | 1433.5 | 1429.9 | 1450.2 | 1456.1 | 1451.5 |
| 150°   | 1471.8 | 1463.4 | 1482.5 | 1489.6 | 1483.7 |
| 152.5° | 1504.0 | 1494.4 | 1512.3 | 1519.6 | 1511.2 |
| 155°   | 1535.0 | 1524.4 | 1538.7 | 1545.8 | 1536.3 |
| 157.5° | 1560.2 | 1550.6 | 1561.4 | 1569.8 | 1560.2 |
| 160°   | 1581.7 | 1574.4 | 1581.7 | 1588.8 | 1580.5 |
| 162.5° | 1600.7 | 1593.6 | 1599.5 | 1607.9 | 1597.2 |
| 165°   | 1617.5 | 1610.4 | 1613.9 | 1622.3 | 1613.9 |
| 167.5° | 1630.6 | 1623.4 | 1627.1 | 1635.5 | 1624.6 |
| 170°   | 1641.4 | 1634.2 | 1636.6 | 1644.9 | 1634.2 |
| 172.5° | 1648.5 | 1641.4 | 1643.8 | 1652.2 | 1641.4 |
| 175°   | 1654.5 | 1646.1 | 1648.5 | 1656.8 | 1644.9 |
| 177.5° | 1656.8 | 1648.5 | 1649.8 | 1658.2 | 1647.4 |
| 180°   | 1650.9 | 1650.9 | 1650.9 | 1650.9 | 1650.9 |

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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 | 10.85            | 11.68 | 11.81 | 12.65 | 13.93 | 6.82           | 7.66  | 7.79  | 8.63  | 9.90  |
|                 | 3H   | 12.52            | 13.26 | 13.49 | 14.24 | 15.54 | 8.01           | 8.75  | 8.98  | 9.73  | 11.03 |
|                 | 4H   | 13.12            | 13.82 | 14.11 | 14.81 | 16.11 | 8.45           | 9.16  | 9.44  | 10.14 | 11.45 |
|                 | 6H   | 13.53            | 14.18 | 14.53 | 15.17 | 16.49 | 8.77           | 9.42  | 9.77  | 10.41 | 11.72 |
|                 | 8H   | 13.65            | 14.27 | 14.66 | 15.28 | 16.59 | 8.86           | 9.47  | 9.86  | 10.48 | 11.79 |
|                 | 12H  | 13.71            | 14.30 | 14.72 | 15.30 | 16.64 | 8.90           | 9.48  | 9.91  | 10.49 | 11.82 |
| 4H              | 2H   | 10.86            | 11.57 | 11.86 | 12.55 | 13.86 | 7.42           | 8.12  | 8.41  | 9.10  | 10.41 |
|                 | 3H   | 12.68            | 13.27 | 13.69 | 14.28 | 15.60 | 8.76           | 9.34  | 9.76  | 10.36 | 11.67 |
|                 | 4H   | 13.37            | 13.90 | 14.38 | 14.91 | 16.25 | 9.30           | 9.83  | 10.31 | 10.84 | 12.18 |
|                 | 6H   | 13.87            | 14.33 | 14.90 | 15.36 | 16.70 | 9.71           | 10.17 | 10.74 | 11.20 | 12.54 |
|                 | 8H   | 14.04            | 14.47 | 15.07 | 15.50 | 16.85 | 9.84           | 10.27 | 10.86 | 11.29 | 12.65 |
|                 | 12H  | 14.13            | 14.52 | 15.18 | 15.56 | 16.92 | 9.90           | 10.29 | 10.94 | 11.33 | 12.69 |
| 8H              | 4H   | 13.33            | 13.76 | 14.36 | 14.79 | 16.14 | 9.58           | 10.00 | 10.60 | 11.03 | 12.38 |
|                 | 6H   | 13.89            | 14.24 | 14.94 | 15.31 | 16.66 | 10.09          | 10.44 | 11.13 | 11.51 | 12.86 |
|                 | 8H   | 14.10            | 14.41 | 15.16 | 15.46 | 16.83 | 10.27          | 10.58 | 11.33 | 11.64 | 13.00 |
|                 | 12H  | 14.23            | 14.51 | 15.29 | 15.55 | 16.97 | 10.39          | 10.66 | 11.44 | 11.71 | 13.12 |
| 12H             | 4H   | 13.29            | 13.67 | 14.33 | 14.71 | 16.07 | 9.58           | 9.97  | 10.62 | 11.01 | 12.36 |
|                 | 6H   | 13.87            | 14.18 | 14.92 | 15.23 | 16.60 | 10.13          | 10.44 | 11.19 | 11.50 | 12.87 |
|                 | 8H   | 14.08            | 14.35 | 15.14 | 15.40 | 16.81 | 10.34          | 10.61 | 11.40 | 11.66 | 13.07 |