

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: P914417

Luminaire Tested: DFN2DIP-SQ2F0-040D060US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914417  
REPORT IS A COMBINATION OF REPORTS P901329 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-040D060US927-FLLONL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

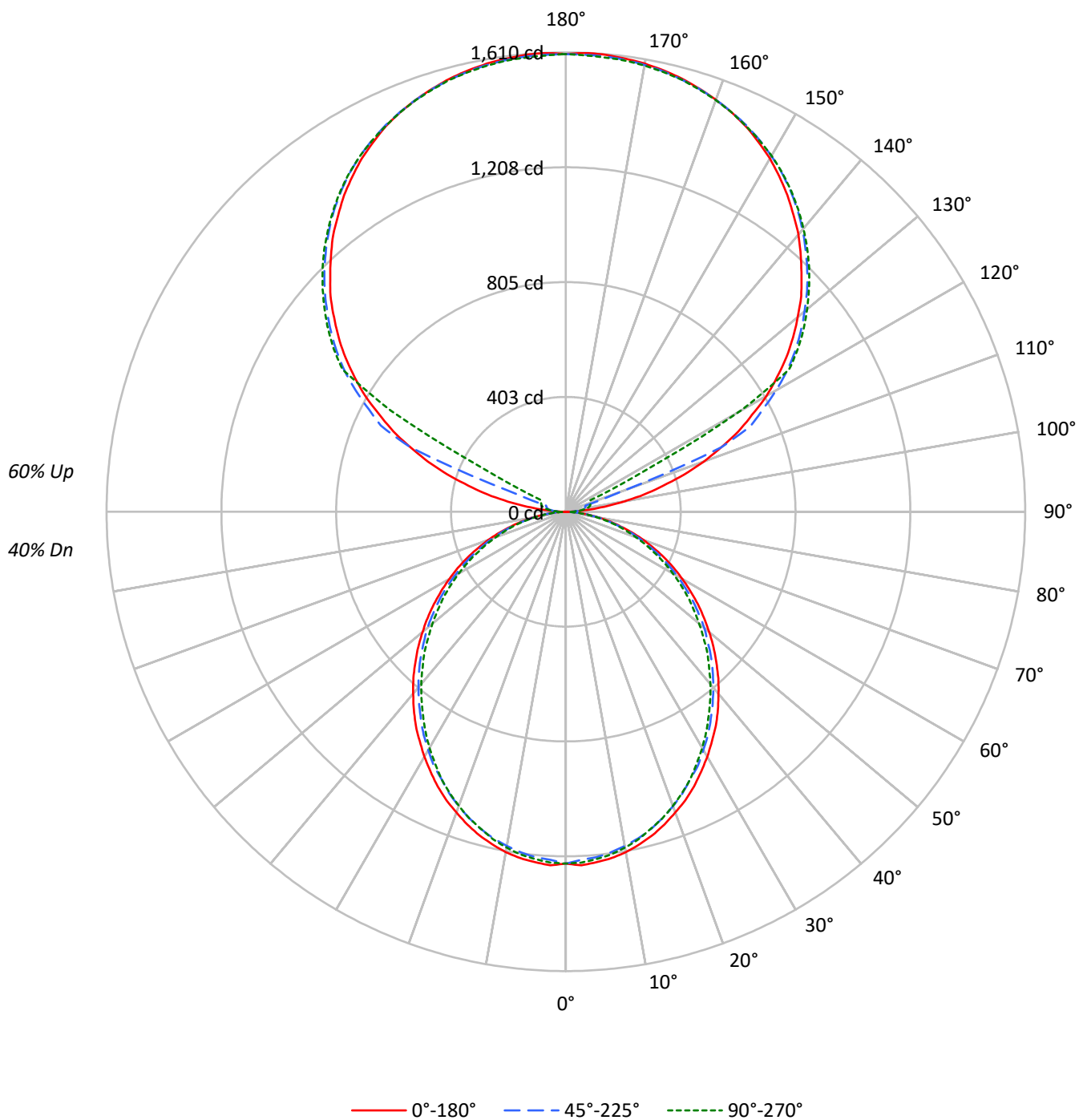
Lumens per Lamp: N/A  
Luminaire Lumens: 7842.6 lumens  
Efficiency: N/A  
Efficacy: 98.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 79.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 78 | 78 | 78 | 62 | 62 | 62 | 47 | 47 | 47 |
| 1   | 96  | 91  | 87  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 41 | 40 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 60 | 56 | 53 | 48 | 45 | 43 | 37 | 35 | 33 |
| 3   | 79  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 48 | 44 | 42 | 39 | 36 | 32 | 30 | 28 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 37 | 34 | 31 | 29 | 26 | 24 |
| 5   | 67  | 55  | 47  | 41  | 60 | 50 | 44 | 38 | 42 | 37 | 33 | 34 | 30 | 27 | 26 | 23 | 21 |
| 6   | 61  | 49  | 41  | 36  | 56 | 45 | 38 | 33 | 38 | 32 | 28 | 30 | 26 | 23 | 24 | 21 | 19 |
| 7   | 57  | 45  | 37  | 31  | 51 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 52  | 40  | 33  | 27  | 48 | 37 | 30 | 26 | 31 | 26 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 18 | 15 | 13 |
| 10  | 46  | 34  | 27  | 22  | 41 | 31 | 25 | 20 | 26 | 21 | 18 | 21 | 18 | 15 | 17 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2711 | 2711 | 2711 |
| 5°  | 2711 | 2667 | 2688 |
| 10° | 2684 | 2626 | 2647 |
| 15° | 2640 | 2577 | 2587 |
| 20° | 2582 | 2511 | 2525 |
| 25° | 2524 | 2433 | 2454 |
| 30° | 2453 | 2360 | 2365 |
| 35° | 2385 | 2276 | 2271 |
| 40° | 2302 | 2190 | 2181 |
| 45° | 2219 | 2103 | 2088 |
| 50° | 2128 | 2012 | 1982 |
| 55° | 2033 | 1908 | 1883 |
| 60° | 1924 | 1784 | 1770 |
| 65° | 1805 | 1655 | 1637 |
| 70° | 1654 | 1498 | 1492 |
| 75° | 1448 | 1309 | 1354 |
| 80° | 1195 | 1068 | 1100 |
| 85° | 808  | 675  | 690  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2219 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.0  | 1.5       |
| 10°-20°   | 326.5  | 4.2       |
| 20°-30°   | 479.8  | 6.1       |
| 30°-40°   | 557.3  | 7.1       |
| 40°-50°   | 556.6  | 7.1       |
| 50°-60°   | 485.3  | 6.2       |
| 60°-70°   | 358.8  | 4.6       |
| 70°-80°   | 203.0  | 2.6       |
| 80°-90°   | 56.4   | 0.7       |
| 90°-100°  | 52.9   | 0.7       |
| 100°-110° | 197.2  | 2.5       |
| 110°-120° | 523.0  | 6.7       |
| 120°-130° | 867.4  | 11.1      |
| 130°-140° | 921.3  | 11.7      |
| 140°-150° | 856.3  | 10.9      |
| 150°-160° | 688.4  | 8.8       |
| 160°-170° | 443.6  | 5.7       |
| 170°-180° | 152.7  | 1.9       |
| 0°-30°    | 922.4  | 11.8      |
| 0°-40°    | 1479.7 | 18.9      |
| 0°-60°    | 2521.7 | 32.2      |
| 0°-90°    | 3139.8 | 40.0      |
| 90°-120°  | 773.0  | 9.9       |
| 90°-150°  | 3418.0 | 43.6      |
| 90°-180°  | 4703.0 | 60.0      |
| 0°-180°   | 7842.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1233 | 1233  | 1233 | 1233  | 1233 |      |
| 5°   | 1233 | 1228  | 1215 | 1225  | 1222 | 117  |
| 15°  | 1174 | 1167  | 1151 | 1156  | 1150 | 331  |
| 25°  | 1062 | 1053  | 1033 | 1035  | 1033 | 489  |
| 35°  | 916  | 905   | 886  | 878   | 873  | 572  |
| 45°  | 746  | 738   | 720  | 707   | 702  | 576  |
| 55°  | 564  | 557   | 543  | 529   | 523  | 505  |
| 65°  | 381  | 373   | 362  | 351   | 345  | 376  |
| 75°  | 199  | 197   | 191  | 184   | 186  | 213  |
| 85°  | 49   | 48    | 46   | 43    | 42   | 54   |
| 90°  | 1    | 14    | 23   | 29    | 31   | 7    |
| 95°  | 75   | 37    | 45   | 51    | 50   | 89   |
| 105° | 353  | 388   | 71   | 84    | 88   | 377  |
| 115° | 667  | 687   | 716  | 179   | 95   | 657  |
| 125° | 944  | 959   | 981  | 989   | 992  | 842  |
| 135° | 1168 | 1186  | 1197 | 1208  | 1206 | 902  |
| 145° | 1355 | 1353  | 1373 | 1381  | 1376 | 847  |
| 155° | 1492 | 1481  | 1495 | 1502  | 1493 | 687  |
| 165° | 1572 | 1565  | 1568 | 1576  | 1568 | 444  |
| 175° | 1608 | 1599  | 1602 | 1610  | 1598 | 153  |
| 180° | 1604 | 1604  | 1604 | 1604  | 1604 |      |

TEST NUMBER: P914417

CATALOG NUMBER: DFN2DIP-SQ2F0-040D060US927-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1233.0 | 1233.0 | 1233.0 | 1233.0 | 1233.0 |
| 2.5°   | 1240.2 | 1234.2 | 1221.1 | 1233.0 | 1230.7 |
| 5°     | 1233.0 | 1228.3 | 1215.2 | 1224.6 | 1222.4 |
| 7.5°   | 1224.6 | 1217.6 | 1204.5 | 1214.1 | 1211.7 |
| 10°    | 1211.7 | 1203.4 | 1189.2 | 1198.6 | 1195.1 |
| 12.5°  | 1193.8 | 1186.8 | 1172.6 | 1178.5 | 1176.1 |
| 15°    | 1173.7 | 1166.6 | 1151.2 | 1156.0 | 1150.1 |
| 17.5°  | 1148.8 | 1141.8 | 1126.3 | 1132.2 | 1126.3 |
| 20°    | 1121.5 | 1114.4 | 1097.9 | 1101.4 | 1096.8 |
| 22.5°  | 1094.3 | 1083.6 | 1068.2 | 1068.2 | 1065.8 |
| 25°    | 1062.2 | 1052.8 | 1032.7 | 1035.0 | 1032.7 |
| 27.5°  | 1026.7 | 1018.3 | 1003.1 | 999.5  | 993.6  |
| 30°    | 991.2  | 981.7  | 963.9  | 960.4  | 955.6  |
| 32.5°  | 953.2  | 946.2  | 927.2  | 920.0  | 915.2  |
| 35°    | 916.5  | 904.7  | 885.7  | 878.5  | 872.6  |
| 37.5°  | 875.0  | 864.3  | 845.3  | 837.0  | 831.1  |
| 40°    | 832.3  | 822.8  | 803.7  | 793.2  | 788.5  |
| 42.5°  | 790.8  | 781.2  | 762.4  | 750.4  | 743.4  |
| 45°    | 745.8  | 737.5  | 719.6  | 706.7  | 701.9  |
| 47.5°  | 701.9  | 693.6  | 674.6  | 661.6  | 654.5  |
| 50°    | 655.6  | 649.7  | 633.1  | 616.5  | 610.5  |
| 52.5°  | 610.5  | 602.3  | 586.9  | 573.9  | 565.5  |
| 55°    | 564.4  | 557.2  | 543.0  | 528.8  | 522.9  |
| 57.5°  | 518.1  | 512.2  | 496.7  | 482.5  | 477.8  |
| 60°    | 471.8  | 467.1  | 450.6  | 437.5  | 434.0  |
| 62.5°  | 426.8  | 418.5  | 406.7  | 394.8  | 390.1  |
| 65°    | 380.6  | 373.4  | 361.6  | 350.9  | 345.1  |
| 67.5°  | 333.2  | 327.2  | 316.6  | 308.3  | 303.6  |
| 70°    | 289.3  | 284.6  | 273.9  | 265.5  | 260.9  |
| 72.5°  | 244.3  | 239.5  | 233.6  | 225.3  | 221.7  |
| 75°    | 199.2  | 196.9  | 190.8  | 183.8  | 186.2  |
| 77.5°  | 158.8  | 154.1  | 151.7  | 148.1  | 144.7  |
| 80°    | 118.6  | 117.3  | 114.9  | 111.5  | 109.1  |
| 82.5°  | 80.6   | 80.6   | 79.5   | 74.7   | 74.7   |
| 85°    | 48.6   | 47.5   | 46.3   | 42.6   | 41.5   |
| 87.5°  | 21.4   | 19.0   | 16.6   | 13.1   | 11.8   |
| 90°    | 1.1    | 13.9   | 23.1   | 29.1   | 31.3   |
| 92.5°  | 29.1   | 24.4   | 27.8   | 30.2   | 31.3   |
| 95°    | 75.4   | 37.1   | 45.2   | 51.2   | 49.9   |
| 97.5°  | 135.8  | 40.6   | 59.1   | 62.7   | 63.8   |
| 100°   | 205.5  | 46.4   | 66.1   | 75.4   | 77.7   |
| 102.5° | 282.0  | 279.8  | 68.5   | 81.2   | 84.8   |
| 105°   | 352.8  | 387.7  | 70.8   | 83.5   | 88.2   |
| 107.5° | 435.3  | 464.2  | 73.2   | 85.9   | 90.5   |
| 110°   | 514.3  | 538.5  | 203.2  | 87.1   | 91.7   |

TEST NUMBER: P914417

CATALOG NUMBER: DFN2DIP-SQ2F0-040D060US927-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 588.5  | 609.3  | 589.6  | 89.3   | 92.9   |
| 115°   | 667.4  | 687.1  | 716.2  | 178.8  | 95.2   |
| 117.5° | 735.9  | 759.1  | 778.9  | 612.8  | 308.7  |
| 120°   | 812.5  | 829.9  | 850.9  | 864.7  | 708.1  |
| 122.5° | 877.4  | 896.0  | 919.3  | 926.2  | 927.5  |
| 125°   | 943.6  | 958.8  | 980.8  | 989.0  | 992.4  |
| 127.5° | 1004.0 | 1020.3 | 1037.8 | 1049.3 | 1050.4 |
| 130°   | 1060.9 | 1079.5 | 1092.2 | 1105.0 | 1103.9 |
| 132.5° | 1119.0 | 1134.1 | 1146.8 | 1157.2 | 1156.1 |
| 135°   | 1167.8 | 1186.4 | 1196.7 | 1208.4 | 1206.0 |
| 137.5° | 1218.7 | 1232.6 | 1244.4 | 1255.9 | 1252.5 |
| 140°   | 1268.6 | 1278.0 | 1290.7 | 1301.2 | 1295.4 |
| 142.5° | 1310.5 | 1318.7 | 1333.7 | 1342.9 | 1337.1 |
| 145°   | 1354.6 | 1353.4 | 1373.1 | 1381.2 | 1375.5 |
| 147.5° | 1392.8 | 1389.3 | 1409.1 | 1414.8 | 1410.3 |
| 150°   | 1430.0 | 1421.9 | 1440.5 | 1447.4 | 1441.6 |
| 152.5° | 1461.3 | 1452.1 | 1469.4 | 1476.5 | 1468.3 |
| 155°   | 1491.5 | 1481.1 | 1495.1 | 1502.0 | 1492.7 |
| 157.5° | 1515.9 | 1506.6 | 1517.1 | 1525.3 | 1515.9 |
| 160°   | 1536.8 | 1529.8 | 1536.8 | 1543.7 | 1535.6 |
| 162.5° | 1555.3 | 1548.4 | 1554.2 | 1562.3 | 1551.9 |
| 165°   | 1571.6 | 1564.7 | 1568.1 | 1576.3 | 1568.1 |
| 167.5° | 1584.4 | 1577.4 | 1581.0 | 1589.1 | 1578.6 |
| 170°   | 1594.9 | 1587.8 | 1590.2 | 1598.3 | 1587.8 |
| 172.5° | 1601.8 | 1594.9 | 1597.2 | 1605.4 | 1594.9 |
| 175°   | 1607.6 | 1599.4 | 1601.8 | 1609.9 | 1598.3 |
| 177.5° | 1609.9 | 1601.8 | 1603.0 | 1611.1 | 1600.7 |
| 180°   | 1604.1 | 1604.1 | 1604.1 | 1604.1 | 1604.1 |

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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 | 9.62             | 10.40 | 10.66 | 11.45 | 12.85 | 9.18           | 9.96  | 10.22 | 11.00 | 12.41 |
|                 | 3H   | 11.26            | 11.96 | 12.31 | 13.01 | 14.44 | 10.77          | 11.47 | 11.82 | 12.52 | 13.95 |
|                 | 4H   | 11.83            | 12.49 | 12.89 | 13.55 | 14.98 | 11.34          | 12.00 | 12.40 | 13.05 | 14.49 |
|                 | 6H   | 12.21            | 12.82 | 13.28 | 13.88 | 15.32 | 11.71          | 12.32 | 12.78 | 13.38 | 14.82 |
|                 | 8H   | 12.31            | 12.89 | 13.38 | 13.96 | 15.40 | 11.80          | 12.38 | 12.88 | 13.46 | 14.90 |
|                 | 12H  | 12.34            | 12.90 | 13.42 | 13.96 | 15.43 | 11.84          | 12.39 | 12.92 | 13.46 | 14.92 |
| 4H              | 2H   | 10.06            | 10.73 | 11.13 | 11.78 | 13.21 | 9.71           | 10.37 | 10.78 | 11.43 | 12.86 |
|                 | 3H   | 11.90            | 12.45 | 12.97 | 13.54 | 14.98 | 11.49          | 12.04 | 12.57 | 13.13 | 14.57 |
|                 | 4H   | 12.60            | 13.10 | 13.68 | 14.18 | 15.64 | 12.17          | 12.68 | 13.25 | 13.75 | 15.22 |
|                 | 6H   | 13.09            | 13.52 | 14.18 | 14.62 | 16.08 | 12.66          | 13.09 | 13.74 | 14.19 | 15.65 |
|                 | 8H   | 13.23            | 13.63 | 14.31 | 14.72 | 16.20 | 12.79          | 13.19 | 13.88 | 14.28 | 15.76 |
|                 | 12H  | 13.29            | 13.65 | 14.39 | 14.76 | 16.24 | 12.84          | 13.21 | 13.94 | 14.31 | 15.79 |
| 8H              | 4H   | 12.77            | 13.18 | 13.86 | 14.27 | 15.75 | 12.40          | 12.80 | 13.48 | 13.89 | 15.37 |
|                 | 6H   | 13.38            | 13.71 | 14.49 | 14.84 | 16.32 | 12.99          | 13.33 | 14.10 | 14.46 | 15.93 |
|                 | 8H   | 13.58            | 13.88 | 14.70 | 14.99 | 16.48 | 13.19          | 13.49 | 14.31 | 14.60 | 16.09 |
|                 | 12H  | 13.70            | 13.96 | 14.82 | 15.07 | 16.60 | 13.29          | 13.55 | 14.41 | 14.66 | 16.19 |
| 12H             | 4H   | 12.75            | 13.12 | 13.86 | 14.22 | 15.71 | 12.38          | 12.75 | 13.49 | 13.85 | 15.34 |
|                 | 6H   | 13.40            | 13.70 | 14.52 | 14.81 | 16.30 | 13.03          | 13.32 | 14.15 | 14.44 | 15.93 |
|                 | 8H   | 13.62            | 13.88 | 14.75 | 14.99 | 16.52 | 13.24          | 13.50 | 14.36 | 14.61 | 16.14 |