

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: P923453

Luminaire Tested: DFN2DIP-TR2F0-060D060US940-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P923453  
REPORT IS A COMBINATION OF REPORTS P901789 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-060D060US940-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

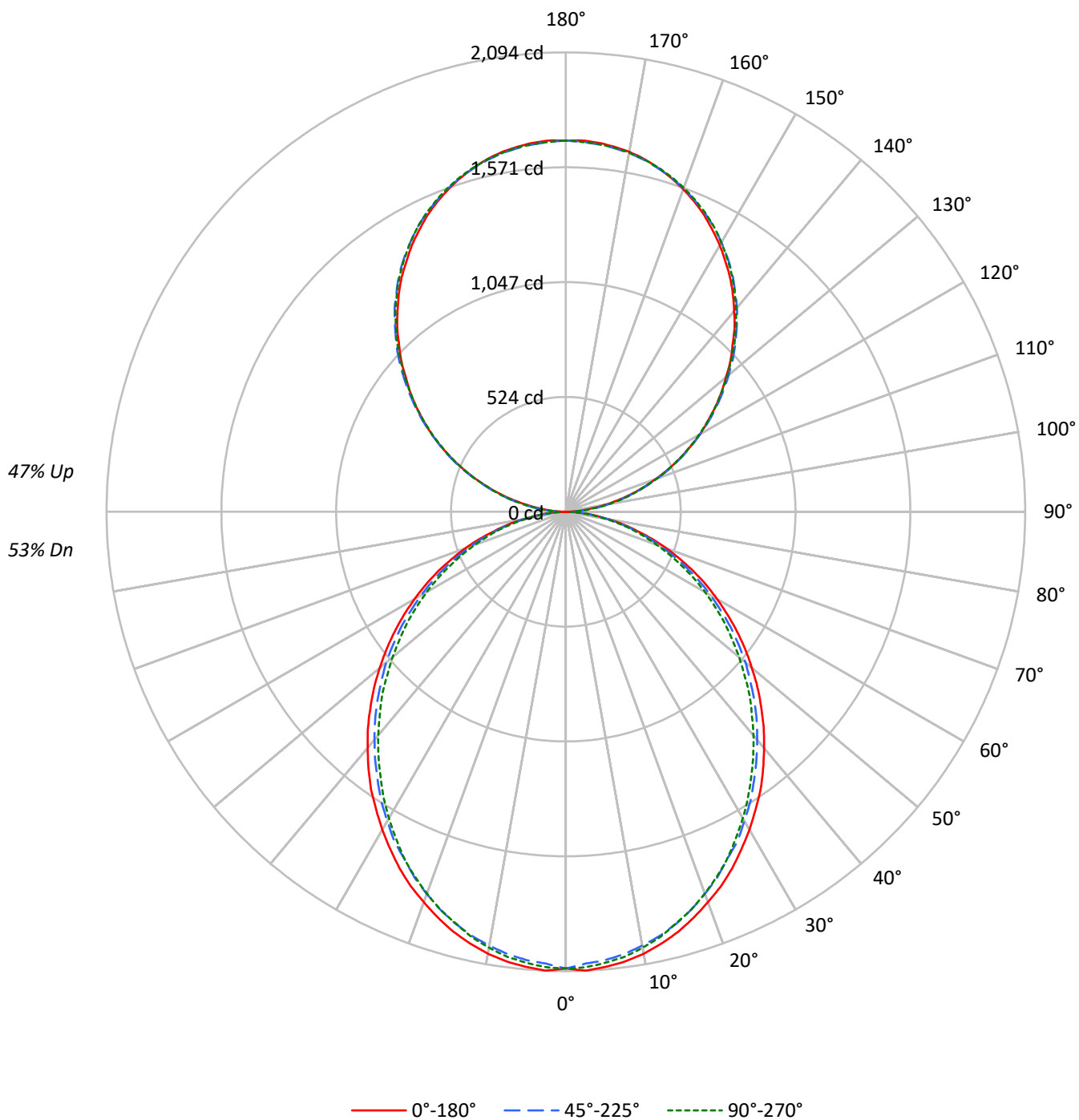
Lumens per Lamp: N/A  
Luminaire Lumens: 10031.8 lumens  
Efficiency: N/A  
Efficacy: 93.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 107.8  
Input Voltage (V): 120  
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



TEST NUMBER: P923453

CATALOG NUMBER: DFN2DIP-TR2F0-060D060US940-FLONL

**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 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |  |    |    |    |  |    |
| 0   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 |  | 71 | 71 | 71 |  | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 |  | 63 | 61 | 59 |  | 52 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 |  | 55 | 52 | 50 |  | 46 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 |  | 49 | 45 | 42 |  | 41 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 |  | 43 | 39 | 36 |  | 36 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 |  | 39 | 35 | 31 |  | 33 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 |  | 35 | 31 | 27 |  | 30 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 |  | 32 | 28 | 24 |  | 27 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 |  | 29 | 25 | 22 |  | 25 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 |  | 27 | 23 | 19 |  | 23 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 |  | 25 | 21 | 18 |  | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4643 | 4643 | 4643 |
| 5°  | 4644 | 4568 | 4601 |
| 10° | 4599 | 4496 | 4531 |
| 15° | 4525 | 4412 | 4426 |
| 20° | 4426 | 4299 | 4318 |
| 25° | 4329 | 4166 | 4196 |
| 30° | 4208 | 4041 | 4041 |
| 35° | 4092 | 3896 | 3879 |
| 40° | 3951 | 3749 | 3723 |
| 45° | 3811 | 3600 | 3564 |
| 50° | 3657 | 3444 | 3380 |
| 55° | 3494 | 3265 | 3209 |
| 60° | 3311 | 3053 | 3013 |
| 65° | 3109 | 2831 | 2783 |
| 70° | 2854 | 2561 | 2532 |
| 75° | 2502 | 2238 | 2290 |
| 80° | 2074 | 1825 | 1851 |
| 85° | 1412 | 1150 | 1151 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3811 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 195.9   | 2.0       |
| 10°-20°   | 551.3   | 5.5       |
| 20°-30°   | 810.2   | 8.1       |
| 30°-40°   | 941.0   | 9.4       |
| 40°-50°   | 939.8   | 9.4       |
| 50°-60°   | 819.5   | 8.2       |
| 60°-70°   | 605.8   | 6.0       |
| 70°-80°   | 342.7   | 3.4       |
| 80°-90°   | 95.3    | 0.9       |
| 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°    | 1557.4  | 15.5      |
| 0°-40°    | 2498.4  | 24.9      |
| 0°-60°    | 4257.8  | 42.4      |
| 0°-90°    | 5301.6  | 52.8      |
| 90°-120°  | 1006.7  | 10.0      |
| 90°-150°  | 3420.1  | 34.1      |
| 90°-180°  | 4730.0  | 47.2      |
| 0°-180°   | 10031.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2082 | 2082  | 2082 | 2082  | 2082 |      |
| 5°   | 2082 | 2074  | 2052 | 2068  | 2064 | 198  |
| 15°  | 1982 | 1970  | 1944 | 1952  | 1942 | 558  |
| 25°  | 1794 | 1778  | 1744 | 1748  | 1744 | 825  |
| 35°  | 1548 | 1528  | 1495 | 1483  | 1473 | 966  |
| 45°  | 1259 | 1245  | 1215 | 1193  | 1185 | 972  |
| 55°  | 953  | 941   | 917  | 893   | 883  | 852  |
| 65°  | 643  | 631   | 611  | 592   | 583  | 635  |
| 75°  | 336  | 332   | 322  | 310   | 314  | 359  |
| 85°  | 82   | 80    | 78   | 72    | 70   | 91   |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2081.8 | 2081.8 | 2081.8 | 2081.8 | 2081.8 |
| 2.5°   | 2093.9 | 2083.9 | 2061.8 | 2081.8 | 2078.0 |
| 5°     | 2081.8 | 2073.9 | 2051.8 | 2067.8 | 2064.0 |
| 7.5°   | 2067.8 | 2055.9 | 2033.8 | 2050.0 | 2045.9 |
| 10°    | 2045.9 | 2031.9 | 2007.9 | 2023.8 | 2017.9 |
| 12.5°  | 2015.8 | 2003.9 | 1979.9 | 1989.9 | 1985.8 |
| 15°    | 1981.7 | 1969.9 | 1943.8 | 1951.9 | 1941.9 |
| 17.5°  | 1939.7 | 1927.9 | 1901.8 | 1911.6 | 1901.8 |
| 20°    | 1893.6 | 1881.8 | 1853.7 | 1859.7 | 1851.8 |
| 22.5°  | 1847.8 | 1829.7 | 1803.6 | 1803.6 | 1799.6 |
| 25°    | 1793.6 | 1777.7 | 1743.7 | 1747.5 | 1743.7 |
| 27.5°  | 1733.5 | 1719.5 | 1693.5 | 1687.7 | 1677.7 |
| 30°    | 1673.7 | 1657.4 | 1627.5 | 1621.6 | 1613.5 |
| 32.5°  | 1609.4 | 1597.6 | 1565.5 | 1553.4 | 1545.3 |
| 35°    | 1547.5 | 1527.5 | 1495.4 | 1483.3 | 1473.3 |
| 37.5°  | 1477.4 | 1459.3 | 1427.3 | 1413.2 | 1403.2 |
| 40°    | 1405.3 | 1389.2 | 1357.2 | 1339.3 | 1331.2 |
| 42.5°  | 1335.2 | 1319.1 | 1287.3 | 1267.1 | 1255.2 |
| 45°    | 1259.3 | 1245.2 | 1215.0 | 1193.2 | 1185.1 |
| 47.5°  | 1185.1 | 1171.1 | 1139.1 | 1117.0 | 1105.0 |
| 50°    | 1107.0 | 1097.0 | 1069.0 | 1040.9 | 1030.9 |
| 52.5°  | 1030.9 | 1016.9 | 991.0  | 968.9  | 954.9  |
| 55°    | 953.0  | 940.8  | 916.9  | 892.9  | 882.9  |
| 57.5°  | 874.9  | 864.9  | 838.7  | 814.8  | 806.6  |
| 60°    | 796.7  | 788.8  | 760.8  | 738.7  | 732.7  |
| 62.5°  | 720.6  | 706.6  | 686.6  | 666.6  | 658.6  |
| 65°    | 642.7  | 630.6  | 610.6  | 592.5  | 582.6  |
| 67.5°  | 562.6  | 552.4  | 534.6  | 520.6  | 512.5  |
| 70°    | 488.5  | 480.5  | 462.4  | 448.4  | 440.5  |
| 72.5°  | 412.4  | 404.4  | 394.4  | 380.4  | 374.4  |
| 75°    | 336.2  | 332.4  | 322.2  | 310.3  | 314.3  |
| 77.5°  | 268.2  | 260.2  | 256.1  | 250.2  | 244.2  |
| 80°    | 200.3  | 198.1  | 194.1  | 188.2  | 184.1  |
| 82.5°  | 136.2  | 136.2  | 134.2  | 126.2  | 126.2  |
| 85°    | 81.9   | 80.1   | 78.1   | 72.0   | 70.1   |
| 87.5°  | 36.1   | 32.1   | 28.0   | 22.1   | 20.0   |
| 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  |



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**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 |

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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 | 12.74            | 13.62 | 13.67 | 14.57 | 15.80 | 12.31          | 13.20 | 13.25 | 14.15 | 15.38 |
|                 | 3H   | 14.38            | 15.17 | 15.32 | 16.13 | 17.38 | 13.91          | 14.71 | 14.86 | 15.67 | 16.92 |
|                 | 4H   | 14.95            | 15.70 | 15.91 | 16.67 | 17.93 | 14.49          | 15.24 | 15.45 | 16.21 | 17.47 |
|                 | 6H   | 15.33            | 16.03 | 16.30 | 16.99 | 18.27 | 14.87          | 15.57 | 15.84 | 16.53 | 17.81 |
|                 | 8H   | 15.43            | 16.09 | 16.40 | 17.07 | 18.35 | 14.97          | 15.63 | 15.94 | 16.62 | 17.89 |
|                 | 12H  | 15.47            | 16.10 | 16.45 | 17.08 | 18.37 | 15.01          | 15.63 | 15.99 | 16.61 | 17.91 |
| 4H              | 2H   | 13.19            | 13.95 | 14.16 | 14.91 | 16.17 | 12.85          | 13.61 | 13.82 | 14.57 | 15.83 |
|                 | 3H   | 15.03            | 15.66 | 16.01 | 16.66 | 17.93 | 14.65          | 15.28 | 15.62 | 16.27 | 17.55 |
|                 | 4H   | 15.73            | 16.30 | 16.71 | 17.29 | 18.59 | 15.34          | 15.91 | 16.32 | 16.90 | 18.20 |
|                 | 6H   | 16.22            | 16.72 | 17.22 | 17.73 | 19.03 | 15.83          | 16.32 | 16.82 | 17.33 | 18.63 |
|                 | 8H   | 16.36            | 16.83 | 17.36 | 17.83 | 19.14 | 15.97          | 16.43 | 16.96 | 17.43 | 18.74 |
|                 | 12H  | 16.43            | 16.84 | 17.44 | 17.86 | 19.18 | 16.02          | 16.44 | 17.04 | 17.46 | 18.78 |
| 8H              | 4H   | 15.92            | 16.38 | 16.91 | 17.38 | 18.70 | 15.57          | 16.03 | 16.56 | 17.03 | 18.35 |
|                 | 6H   | 16.52            | 16.91 | 17.54 | 17.95 | 19.26 | 16.17          | 16.55 | 17.19 | 17.60 | 18.91 |
|                 | 8H   | 16.73            | 17.07 | 17.76 | 18.10 | 19.43 | 16.37          | 16.71 | 17.40 | 17.74 | 19.07 |
|                 | 12H  | 16.85            | 17.14 | 17.88 | 18.17 | 19.54 | 16.48          | 16.77 | 17.51 | 17.80 | 19.17 |
| 12H             | 4H   | 15.90            | 16.32 | 16.92 | 17.34 | 18.66 | 15.56          | 15.98 | 16.57 | 17.00 | 18.31 |
|                 | 6H   | 16.55            | 16.89 | 17.58 | 17.92 | 19.25 | 16.21          | 16.54 | 17.24 | 17.58 | 18.91 |
|                 | 8H   | 16.77            | 17.07 | 17.81 | 18.10 | 19.47 | 16.43          | 16.73 | 17.46 | 17.75 | 19.13 |