

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: P909791

Luminaire Tested: DFN2DIP-TR2F0-050D050US840-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909791  
REPORT IS A COMBINATION OF REPORTS P901778 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-050D050US840-RLLONL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

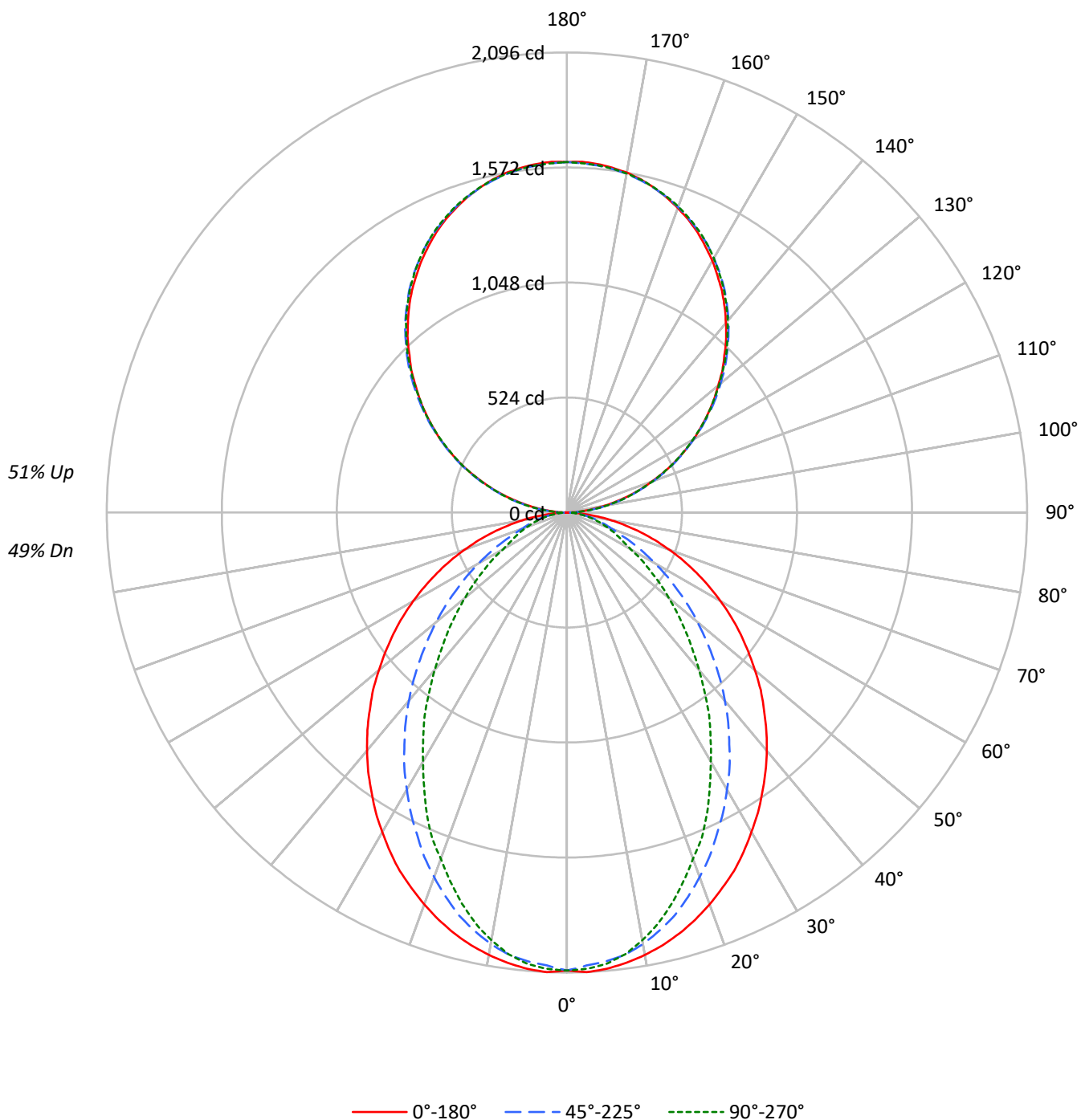
Lumens per Lamp: N/A  
Luminaire Lumens: 8760.6 lumens  
Efficiency: N/A  
Efficacy: 101.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 86  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4655 | 4655 | 4655 |
| 5°  | 4655 | 4571 | 4602 |
| 10° | 4602 | 4470 | 4444 |
| 15° | 4532 | 4313 | 4206 |
| 20° | 4441 | 4099 | 3915 |
| 25° | 4348 | 3862 | 3635 |
| 30° | 4226 | 3620 | 3283 |
| 35° | 4105 | 3361 | 2973 |
| 40° | 3982 | 3093 | 2620 |
| 45° | 3841 | 2798 | 2300 |
| 50° | 3693 | 2501 | 1988 |
| 55° | 3538 | 2185 | 1689 |
| 60° | 3359 | 1856 | 1383 |
| 65° | 3153 | 1523 | 1236 |
| 70° | 2902 | 1213 | 1107 |
| 75° | 2586 | 1049 | 991  |
| 80° | 2131 | 852  | 836  |
| 85° | 1400 | 529  | 589  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3841 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 195.6  | 2.2       |
| 10°-20°   | 536.9  | 6.1       |
| 20°-30°   | 753.8  | 8.6       |
| 30°-40°   | 821.7  | 9.4       |
| 40°-50°   | 755.2  | 8.6       |
| 50°-60°   | 593.1  | 6.8       |
| 60°-70°   | 386.1  | 4.4       |
| 70°-80°   | 198.7  | 2.3       |
| 80°-90°   | 55.3   | 0.6       |
| 90°-100°  | 98.8   | 1.1       |
| 100°-110° | 314.0  | 3.6       |
| 110°-120° | 537.3  | 6.1       |
| 120°-130° | 706.6  | 8.1       |
| 130°-140° | 793.2  | 9.1       |
| 140°-150° | 777.8  | 8.9       |
| 150°-160° | 652.5  | 7.4       |
| 160°-170° | 432.7  | 4.9       |
| 170°-180° | 151.2  | 1.7       |
| 0°-30°    | 1486.3 | 17.0      |
| 0°-40°    | 2308.0 | 26.3      |
| 0°-60°    | 3656.4 | 41.7      |
| 0°-90°    | 4296.5 | 49.0      |
| 90°-120°  | 950.1  | 10.8      |
| 90°-150°  | 3227.7 | 36.8      |
| 90°-180°  | 4464.0 | 51.0      |
| 0°-180°   | 8760.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2087 | 2087  | 2087 | 2087  | 2087 |      |
| 5°   | 2087 | 2078  | 2053 | 2070  | 2064 | 198  |
| 15°  | 1985 | 1964  | 1900 | 1864  | 1845 | 559  |
| 25°  | 1802 | 1741  | 1617 | 1539  | 1511 | 829  |
| 35°  | 1552 | 1456  | 1290 | 1171  | 1129 | 972  |
| 45°  | 1269 | 1143  | 944  | 810   | 765  | 980  |
| 55°  | 965  | 818   | 614  | 500   | 465  | 862  |
| 65°  | 652  | 499   | 329  | 264   | 259  | 646  |
| 75°  | 348  | 215   | 151  | 138   | 136  | 368  |
| 85°  | 81   | 42    | 36   | 36    | 36   | 93   |
| 90°  | 1    | 17    | 47   | 44    | 46   | 9    |
| 95°  | 70   | 84    | 86   | 86    | 84   | 78   |
| 105° | 290  | 294   | 297  | 299   | 299  | 306  |
| 115° | 539  | 547   | 544  | 543   | 539  | 533  |
| 125° | 784  | 796   | 792  | 788   | 787  | 701  |
| 135° | 1014 | 1029  | 1032 | 1031  | 1027 | 784  |
| 145° | 1232 | 1241  | 1249 | 1250  | 1245 | 769  |
| 155° | 1408 | 1412  | 1416 | 1423  | 1419 | 648  |
| 165° | 1532 | 1530  | 1530 | 1540  | 1533 | 432  |
| 175° | 1594 | 1590  | 1587 | 1597  | 1589 | 151  |
| 180° | 1597 | 1597  | 1597 | 1597  | 1597 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2086.9 | 2086.9 | 2086.9 | 2086.9 | 2086.9 |
| 2.5°   | 2096.3 | 2086.9 | 2066.1 | 2085.1 | 2081.2 |
| 5°     | 2086.9 | 2077.5 | 2052.9 | 2069.8 | 2064.3 |
| 7.5°   | 2069.8 | 2058.6 | 2032.2 | 2039.6 | 2030.1 |
| 10°    | 2047.2 | 2034.0 | 1996.3 | 1990.5 | 1979.2 |
| 12.5°  | 2018.9 | 2002.0 | 1950.9 | 1939.6 | 1918.7 |
| 15°    | 1984.9 | 1964.1 | 1900.0 | 1864.1 | 1845.2 |
| 17.5°  | 1945.2 | 1915.0 | 1835.6 | 1794.1 | 1763.8 |
| 20°    | 1900.0 | 1862.1 | 1767.7 | 1720.6 | 1678.9 |
| 22.5°  | 1850.9 | 1807.4 | 1697.8 | 1633.7 | 1605.4 |
| 25°    | 1801.7 | 1741.2 | 1616.6 | 1539.2 | 1510.8 |
| 27.5°  | 1743.2 | 1678.9 | 1541.1 | 1452.3 | 1408.9 |
| 30°    | 1680.9 | 1609.0 | 1457.9 | 1361.7 | 1310.6 |
| 32.5°  | 1620.4 | 1533.5 | 1378.8 | 1265.4 | 1218.1 |
| 35°    | 1552.5 | 1456.1 | 1290.0 | 1170.9 | 1129.3 |
| 37.5°  | 1486.3 | 1382.4 | 1206.9 | 1076.4 | 1029.4 |
| 40°    | 1416.4 | 1303.2 | 1119.8 | 985.8  | 936.8  |
| 42.5°  | 1344.7 | 1223.9 | 1033.1 | 893.2  | 846.2  |
| 45°    | 1269.2 | 1142.6 | 944.3  | 810.1  | 764.8  |
| 47.5°  | 1197.4 | 1063.4 | 859.4  | 725.2  | 683.7  |
| 50°    | 1118.1 | 984.0  | 776.3  | 645.8  | 606.3  |
| 52.5°  | 1040.6 | 898.9  | 696.9  | 572.3  | 536.4  |
| 55°    | 965.0  | 817.7  | 613.7  | 500.5  | 464.6  |
| 57.5°  | 887.7  | 736.6  | 540.2  | 434.4  | 404.1  |
| 60°    | 808.3  | 657.2  | 462.6  | 366.5  | 336.2  |
| 62.5°  | 730.9  | 579.9  | 396.6  | 306.0  | 290.9  |
| 65°    | 651.6  | 498.6  | 328.6  | 264.5  | 258.7  |
| 67.5°  | 576.0  | 423.0  | 264.5  | 232.3  | 226.6  |
| 70°    | 496.8  | 349.4  | 219.0  | 200.2  | 192.6  |
| 72.5°  | 421.2  | 281.3  | 183.2  | 168.1  | 164.3  |
| 75°    | 347.5  | 215.2  | 151.1  | 137.8  | 136.0  |
| 77.5°  | 273.9  | 152.9  | 119.1  | 111.4  | 107.6  |
| 80°    | 205.8  | 109.6  | 90.6   | 83.1   | 83.1   |
| 82.5°  | 143.5  | 73.7   | 62.3   | 58.5   | 58.5   |
| 85°    | 81.2   | 41.5   | 35.9   | 35.9   | 35.9   |
| 87.5°  | 30.3   | 15.0   | 15.0   | 13.2   | 13.2   |
| 90°    | 1.4    | 17.4   | 47.2   | 44.3   | 45.7   |
| 92.5°  | 29.9   | 40.4   | 41.9   | 43.3   | 43.3   |
| 95°    | 70.3   | 83.8   | 86.1   | 86.1   | 83.8   |
| 97.5°  | 116.9  | 129.5  | 134.8  | 134.8  | 134.8  |
| 100°   | 170.9  | 182.0  | 185.8  | 185.8  | 184.4  |
| 102.5° | 227.7  | 235.9  | 241.2  | 242.7  | 241.2  |
| 105°   | 289.8  | 293.7  | 296.6  | 298.9  | 298.9  |
| 107.5° | 351.4  | 357.2  | 357.2  | 358.2  | 351.4  |
| 110°   | 411.1  | 418.9  | 418.9  | 418.9  | 415.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 475.6  | 483.8  | 482.4  | 478.6  | 475.6  |
| 115°   | 539.2  | 546.9  | 544.5  | 543.1  | 539.2  |
| 117.5° | 602.3  | 612.9  | 606.1  | 602.3  | 598.4  |
| 120°   | 665.8  | 676.4  | 665.8  | 665.8  | 661.5  |
| 122.5° | 723.6  | 737.1  | 730.3  | 726.5  | 723.6  |
| 125°   | 784.3  | 796.3  | 792.4  | 788.1  | 786.7  |
| 127.5° | 843.4  | 858.4  | 853.1  | 847.3  | 843.4  |
| 130°   | 898.9  | 916.2  | 913.7  | 910.9  | 905.5  |
| 132.5° | 961.0  | 974.4  | 975.4  | 968.7  | 964.8  |
| 135°   | 1014.4 | 1029.3 | 1032.2 | 1030.8 | 1026.9 |
| 137.5° | 1074.1 | 1086.1 | 1088.5 | 1087.5 | 1081.8 |
| 140°   | 1126.5 | 1138.6 | 1145.3 | 1145.3 | 1140.0 |
| 142.5° | 1180.4 | 1192.6 | 1196.4 | 1197.8 | 1192.6 |
| 145°   | 1231.5 | 1241.1 | 1248.8 | 1250.3 | 1245.0 |
| 147.5° | 1277.3 | 1289.3 | 1295.1 | 1297.5 | 1292.1 |
| 150°   | 1324.4 | 1332.6 | 1337.9 | 1342.2 | 1337.9 |
| 152.5° | 1366.3 | 1374.5 | 1381.2 | 1386.5 | 1381.2 |
| 155°   | 1408.2 | 1412.0 | 1416.3 | 1423.1 | 1418.8 |
| 157.5° | 1444.3 | 1447.1 | 1449.6 | 1459.3 | 1452.5 |
| 160°   | 1476.5 | 1479.5 | 1480.9 | 1489.0 | 1483.3 |
| 162.5° | 1506.4 | 1506.4 | 1507.8 | 1517.0 | 1510.3 |
| 165°   | 1532.0 | 1530.5 | 1530.5 | 1540.1 | 1533.4 |
| 167.5° | 1555.0 | 1550.6 | 1550.6 | 1560.3 | 1553.6 |
| 170°   | 1572.4 | 1568.5 | 1567.1 | 1576.7 | 1568.5 |
| 172.5° | 1584.4 | 1580.5 | 1579.1 | 1588.7 | 1580.5 |
| 175°   | 1594.1 | 1590.1 | 1587.3 | 1596.9 | 1588.7 |
| 177.5° | 1599.3 | 1595.5 | 1592.6 | 1600.7 | 1592.6 |
| 180°   | 1596.9 | 1596.9 | 1596.9 | 1596.9 | 1596.9 |

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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 | 12.27            | 13.09 | 13.24 | 14.07 | 15.36 | 8.25           | 9.07  | 9.22  | 10.06 | 11.34 |
|                 | 3H   | 13.92            | 14.66 | 14.91 | 15.65 | 16.96 | 9.42           | 10.16 | 10.41 | 11.15 | 12.46 |
|                 | 4H   | 14.52            | 15.21 | 15.51 | 16.20 | 17.52 | 9.86           | 10.56 | 10.86 | 11.55 | 12.87 |
|                 | 6H   | 14.92            | 15.56 | 15.92 | 16.56 | 17.89 | 10.17          | 10.81 | 11.18 | 11.81 | 13.14 |
|                 | 8H   | 15.03            | 15.64 | 16.05 | 16.66 | 17.98 | 10.25          | 10.86 | 11.27 | 11.88 | 13.20 |
|                 | 12H  | 15.09            | 15.66 | 16.10 | 16.67 | 18.02 | 10.29          | 10.87 | 11.31 | 11.88 | 13.23 |
| 4H              | 2H   | 12.28            | 12.98 | 13.29 | 13.97 | 15.29 | 8.83           | 9.53  | 9.84  | 10.52 | 11.84 |
|                 | 3H   | 14.08            | 14.66 | 15.10 | 15.69 | 17.02 | 10.16          | 10.74 | 11.18 | 11.77 | 13.10 |
|                 | 4H   | 14.76            | 15.29 | 15.78 | 16.30 | 17.66 | 10.70          | 11.23 | 11.72 | 12.24 | 13.60 |
|                 | 6H   | 15.25            | 15.70 | 16.28 | 16.74 | 18.10 | 11.10          | 11.55 | 12.13 | 12.59 | 13.94 |
|                 | 8H   | 15.41            | 15.84 | 16.44 | 16.87 | 18.23 | 11.22          | 11.64 | 12.25 | 12.67 | 14.04 |
|                 | 12H  | 15.49            | 15.88 | 16.54 | 16.92 | 18.29 | 11.27          | 11.66 | 12.32 | 12.70 | 14.07 |
| 8H              | 4H   | 14.72            | 15.15 | 15.75 | 16.18 | 17.54 | 10.96          | 11.39 | 11.99 | 12.42 | 13.78 |
|                 | 6H   | 15.26            | 15.61 | 16.32 | 16.69 | 18.05 | 11.46          | 11.81 | 12.51 | 12.88 | 14.25 |
|                 | 8H   | 15.46            | 15.77 | 16.52 | 16.83 | 18.21 | 11.64          | 11.95 | 12.70 | 13.00 | 14.39 |
|                 | 12H  | 15.59            | 15.86 | 16.65 | 16.91 | 18.33 | 11.74          | 12.01 | 12.81 | 13.07 | 14.49 |
| 12H             | 4H   | 14.67            | 15.05 | 15.72 | 16.10 | 17.47 | 10.96          | 11.35 | 12.01 | 12.39 | 13.76 |
|                 | 6H   | 15.24            | 15.54 | 16.30 | 16.60 | 17.99 | 11.50          | 11.81 | 12.56 | 12.87 | 14.25 |
|                 | 8H   | 15.44            | 15.71 | 16.50 | 16.76 | 18.19 | 11.70          | 11.97 | 12.76 | 13.02 | 14.45 |