

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: P925623

Luminaire Tested: DFN2DIP-SQ3F0-090D050US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925623  
REPORT IS A COMBINATION OF REPORTS P901410 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-090D050US950-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

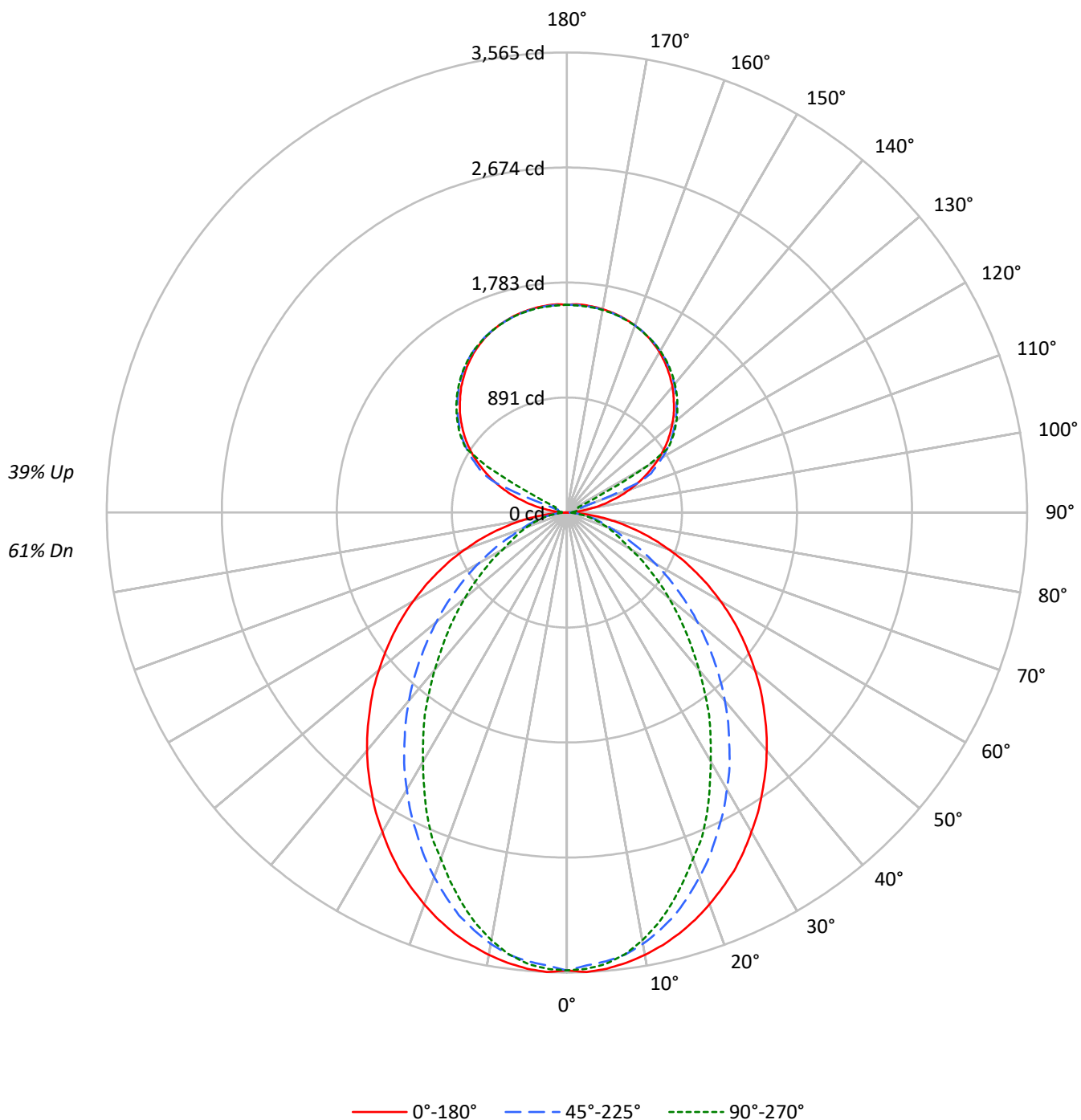
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12020.4 lumens  
Efficiency: N/A  
Efficacy: 96.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 124.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 89 | 89 | 89 | 77 | 77 | 77 | 66 | 66 | 66 |
| 1   | 101 | 97  | 93  | 90  | 94  | 91  | 87  | 84  | 79 | 77 | 75 | 69 | 67 | 65 | 59 | 58 | 57 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 75  | 70  | 70 | 66 | 63 | 61 | 58 | 56 | 53 | 51 | 49 |
| 3   | 85  | 75  | 68  | 62  | 79  | 71  | 65  | 59  | 62 | 58 | 53 | 55 | 51 | 48 | 47 | 45 | 42 |
| 4   | 78  | 67  | 59  | 53  | 73  | 63  | 56  | 51  | 56 | 50 | 46 | 49 | 45 | 41 | 43 | 40 | 37 |
| 5   | 72  | 60  | 52  | 46  | 67  | 57  | 50  | 44  | 50 | 45 | 40 | 44 | 40 | 36 | 39 | 35 | 33 |
| 6   | 66  | 54  | 46  | 41  | 62  | 51  | 44  | 39  | 46 | 40 | 35 | 40 | 36 | 32 | 35 | 32 | 29 |
| 7   | 61  | 49  | 41  | 36  | 57  | 47  | 39  | 34  | 42 | 36 | 32 | 37 | 32 | 29 | 33 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 53  | 43  | 36  | 31  | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 30 | 26 | 31 | 27 | 23 | 28 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 30  | 25  | 33 | 27 | 23 | 29 | 25 | 21 | 26 | 22 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4066 | 4066 | 4066 |
| 5°  | 4070 | 3999 | 4026 |
| 10° | 4027 | 3918 | 3893 |
| 15° | 3969 | 3786 | 3690 |
| 20° | 3893 | 3605 | 3440 |
| 25° | 3815 | 3402 | 3199 |
| 30° | 3712 | 3195 | 2894 |
| 35° | 3610 | 2972 | 2626 |
| 40° | 3507 | 2742 | 2319 |
| 45° | 3387 | 2487 | 2041 |
| 50° | 3262 | 2230 | 1769 |
| 55° | 3132 | 1956 | 1508 |
| 60° | 2981 | 1670 | 1240 |
| 65° | 2808 | 1379 | 1115 |
| 70° | 2597 | 1107 | 1007 |
| 75° | 2332 | 970  | 913  |
| 80° | 1948 | 805  | 787  |
| 85° | 1320 | 525  | 584  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3387 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 332.6   | 2.8       |
| 10°-20°   | 913.0   | 7.6       |
| 20°-30°   | 1281.8  | 10.7      |
| 30°-40°   | 1397.3  | 11.6      |
| 40°-50°   | 1284.2  | 10.7      |
| 50°-60°   | 1008.6  | 8.4       |
| 60°-70°   | 656.5   | 5.5       |
| 70°-80°   | 337.9   | 2.8       |
| 80°-90°   | 89.1    | 0.7       |
| 90°-100°  | 53.1    | 0.4       |
| 100°-110° | 197.9   | 1.6       |
| 110°-120° | 524.8   | 4.4       |
| 120°-130° | 870.4   | 7.2       |
| 130°-140° | 924.6   | 7.7       |
| 140°-150° | 859.3   | 7.1       |
| 150°-160° | 690.9   | 5.7       |
| 160°-170° | 445.2   | 3.7       |
| 170°-180° | 153.2   | 1.3       |
| 0°-30°    | 2527.4  | 21.0      |
| 0°-40°    | 3924.6  | 32.6      |
| 0°-60°    | 6217.4  | 51.7      |
| 0°-90°    | 7301.0  | 60.7      |
| 90°-120°  | 775.8   | 6.5       |
| 90°-150°  | 3430.2  | 28.5      |
| 90°-180°  | 4719.0  | 39.3      |
| 0°-180°   | 12020.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3549 | 3549  | 3549 | 3549  | 3549 |      |
| 5°   | 3549 | 3533  | 3491 | 3520  | 3510 | 336  |
| 15°  | 3375 | 3340  | 3231 | 3170  | 3138 | 951  |
| 25°  | 3064 | 2961  | 2749 | 2617  | 2569 | 1409 |
| 35°  | 2640 | 2476  | 2194 | 1991  | 1920 | 1652 |
| 45°  | 2158 | 1943  | 1606 | 1378  | 1300 | 1667 |
| 55°  | 1641 | 1390  | 1044 | 851   | 790  | 1466 |
| 65°  | 1108 | 848   | 559  | 450   | 440  | 1099 |
| 75°  | 591  | 366   | 257  | 234   | 231  | 625  |
| 85°  | 138  | 70    | 61   | 61    | 61   | 158  |
| 90°  | 1    | 14    | 23   | 29    | 31   | 11   |
| 95°  | 76   | 37    | 45   | 51    | 50   | 90   |
| 105° | 354  | 389   | 71   | 84    | 88   | 378  |
| 115° | 670  | 690   | 719  | 179   | 96   | 659  |
| 125° | 947  | 962   | 984  | 992   | 996  | 845  |
| 135° | 1172 | 1191  | 1201 | 1213  | 1210 | 905  |
| 145° | 1359 | 1358  | 1378 | 1386  | 1380 | 850  |
| 155° | 1497 | 1486  | 1500 | 1507  | 1498 | 690  |
| 165° | 1577 | 1570  | 1574 | 1582  | 1574 | 446  |
| 175° | 1613 | 1605  | 1608 | 1616  | 1604 | 154  |
| 180° | 1610 | 1610  | 1610 | 1610  | 1610 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3548.6 | 3548.6 | 3548.6 | 3548.6 | 3548.6 |
| 2.5°   | 3564.6 | 3548.6 | 3513.1 | 3545.5 | 3539.1 |
| 5°     | 3548.6 | 3532.6 | 3490.7 | 3519.6 | 3510.1 |
| 7.5°   | 3519.6 | 3500.5 | 3455.6 | 3468.2 | 3452.1 |
| 10°    | 3481.1 | 3458.6 | 3394.6 | 3384.7 | 3365.6 |
| 12.5°  | 3433.1 | 3404.2 | 3317.2 | 3298.2 | 3262.7 |
| 15°    | 3375.2 | 3339.8 | 3230.7 | 3169.7 | 3137.7 |
| 17.5°  | 3307.7 | 3256.3 | 3121.3 | 3050.8 | 2999.4 |
| 20°    | 3230.7 | 3166.3 | 3005.8 | 2925.7 | 2854.8 |
| 22.5°  | 3147.2 | 3073.3 | 2886.9 | 2777.9 | 2729.9 |
| 25°    | 3063.8 | 2960.8 | 2749.0 | 2617.4 | 2569.0 |
| 27.5°  | 2964.3 | 2854.8 | 2620.4 | 2469.5 | 2395.6 |
| 30°    | 2858.3 | 2736.0 | 2479.1 | 2315.5 | 2228.6 |
| 32.5°  | 2755.3 | 2607.5 | 2344.5 | 2151.7 | 2071.2 |
| 35°    | 2639.9 | 2476.0 | 2193.5 | 1991.2 | 1920.3 |
| 37.5°  | 2527.4 | 2350.7 | 2052.1 | 1830.3 | 1750.3 |
| 40°    | 2408.6 | 2216.0 | 1904.3 | 1676.4 | 1592.9 |
| 42.5°  | 2286.5 | 2081.2 | 1756.7 | 1519.0 | 1438.8 |
| 45°    | 2158.1 | 1942.8 | 1605.8 | 1377.5 | 1300.5 |
| 47.5°  | 2036.1 | 1808.2 | 1461.3 | 1233.0 | 1162.5 |
| 50°    | 1901.2 | 1673.2 | 1320.0 | 1098.1 | 1031.0 |
| 52.5°  | 1769.4 | 1528.5 | 1185.1 | 973.1  | 912.1  |
| 55°    | 1640.9 | 1390.5 | 1043.6 | 851.2  | 790.1  |
| 57.5°  | 1509.4 | 1252.5 | 918.6  | 738.7  | 687.3  |
| 60°    | 1374.4 | 1117.5 | 786.8  | 623.2  | 571.7  |
| 62.5°  | 1243.0 | 986.1  | 674.3  | 520.3  | 494.7  |
| 65°    | 1108.0 | 847.7  | 558.8  | 449.7  | 439.9  |
| 67.5°  | 979.6  | 719.2  | 449.7  | 394.9  | 385.3  |
| 70°    | 844.7  | 594.2  | 372.4  | 340.4  | 327.4  |
| 72.5°  | 716.2  | 478.3  | 311.4  | 285.8  | 279.4  |
| 75°    | 590.8  | 366.0  | 256.9  | 234.4  | 231.3  |
| 77.5°  | 465.7  | 260.0  | 202.3  | 189.5  | 183.0  |
| 80°    | 349.9  | 186.4  | 154.0  | 141.4  | 141.4  |
| 82.5°  | 243.9  | 125.4  | 106.0  | 99.5   | 99.5   |
| 85°    | 137.9  | 70.5   | 61.0   | 61.0   | 61.0   |
| 87.5°  | 51.4   | 25.6   | 25.6   | 22.5   | 22.5   |
| 90°    | 1.1    | 13.9   | 23.3   | 29.2   | 31.4   |
| 92.5°  | 29.2   | 24.5   | 28.0   | 30.3   | 31.4   |
| 95°    | 75.7   | 37.2   | 45.4   | 51.3   | 50.1   |
| 97.5°  | 136.2  | 40.8   | 59.3   | 63.0   | 64.0   |
| 100°   | 206.3  | 46.7   | 66.4   | 75.7   | 78.0   |
| 102.5° | 283.1  | 280.8  | 68.8   | 81.5   | 85.1   |
| 105°   | 354.1  | 389.1  | 71.1   | 83.9   | 88.5   |
| 107.5° | 436.8  | 465.8  | 73.5   | 86.1   | 90.9   |
| 110°   | 516.1  | 540.4  | 203.9  | 87.4   | 92.0   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 590.6  | 611.5  | 591.8  | 89.7   | 93.2   |
| 115°   | 669.8  | 689.6  | 718.7  | 179.4  | 95.6   |
| 117.5° | 738.5  | 761.8  | 781.7  | 614.9  | 309.9  |
| 120°   | 815.4  | 832.8  | 853.8  | 867.9  | 710.5  |
| 122.5° | 880.5  | 899.2  | 922.6  | 929.6  | 930.8  |
| 125°   | 946.9  | 962.2  | 984.3  | 992.4  | 996.0  |
| 127.5° | 1007.5 | 1023.8 | 1041.5 | 1053.0 | 1054.2 |
| 130°   | 1064.7 | 1083.4 | 1096.1 | 1108.9 | 1107.9 |
| 132.5° | 1123.0 | 1138.1 | 1150.8 | 1161.4 | 1160.3 |
| 135°   | 1171.9 | 1190.6 | 1200.9 | 1212.7 | 1210.3 |
| 137.5° | 1223.0 | 1237.1 | 1248.8 | 1260.4 | 1257.0 |
| 140°   | 1273.1 | 1282.6 | 1295.2 | 1305.7 | 1300.0 |
| 142.5° | 1315.2 | 1323.4 | 1338.5 | 1347.7 | 1341.9 |
| 145°   | 1359.4 | 1358.2 | 1378.0 | 1386.2 | 1380.3 |
| 147.5° | 1397.8 | 1394.3 | 1414.1 | 1419.9 | 1415.4 |
| 150°   | 1435.1 | 1427.0 | 1445.6 | 1452.6 | 1446.7 |
| 152.5° | 1466.5 | 1457.2 | 1474.7 | 1481.8 | 1473.5 |
| 155°   | 1496.8 | 1486.4 | 1500.4 | 1507.3 | 1498.1 |
| 157.5° | 1521.2 | 1512.0 | 1522.5 | 1530.7 | 1521.2 |
| 160°   | 1542.3 | 1535.3 | 1542.3 | 1549.2 | 1541.1 |
| 162.5° | 1560.8 | 1554.0 | 1559.7 | 1567.9 | 1557.4 |
| 165°   | 1577.2 | 1570.3 | 1573.7 | 1581.8 | 1573.7 |
| 167.5° | 1590.0 | 1583.0 | 1586.6 | 1594.7 | 1584.2 |
| 170°   | 1600.5 | 1593.5 | 1595.9 | 1604.0 | 1593.5 |
| 172.5° | 1607.5 | 1600.5 | 1602.9 | 1611.0 | 1600.5 |
| 175°   | 1613.3 | 1605.1 | 1607.5 | 1615.6 | 1604.0 |
| 177.5° | 1615.6 | 1607.5 | 1608.7 | 1616.8 | 1606.3 |
| 180°   | 1609.8 | 1609.8 | 1609.8 | 1609.8 | 1609.8 |

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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 | 12.93            | 13.86 | 13.80 | 14.74 | 15.85 | 8.89           | 9.82  | 9.76  | 10.70 | 11.82 |
|                 | 3H   | 14.61            | 15.44 | 15.49 | 16.33 | 17.47 | 10.08          | 10.91 | 10.96 | 11.80 | 12.94 |
|                 | 4H   | 15.22            | 16.01 | 16.12 | 16.90 | 18.05 | 10.53          | 11.32 | 11.43 | 12.21 | 13.36 |
|                 | 6H   | 15.65            | 16.37 | 16.55 | 17.27 | 18.43 | 10.85          | 11.57 | 11.76 | 12.48 | 13.64 |
|                 | 8H   | 15.77            | 16.46 | 16.69 | 17.38 | 18.54 | 10.94          | 11.63 | 11.86 | 12.55 | 13.71 |
|                 | 12H  | 15.84            | 16.49 | 16.76 | 17.40 | 18.59 | 10.99          | 11.64 | 11.91 | 12.56 | 13.74 |
| 4H              | 2H   | 12.96            | 13.74 | 13.86 | 14.64 | 15.79 | 9.50           | 10.28 | 10.40 | 11.18 | 12.33 |
|                 | 3H   | 14.79            | 15.44 | 15.70 | 16.37 | 17.54 | 10.85          | 11.50 | 11.76 | 12.43 | 13.59 |
|                 | 4H   | 15.49            | 16.08 | 16.41 | 17.00 | 18.19 | 11.40          | 11.99 | 12.32 | 12.91 | 14.10 |
|                 | 6H   | 16.00            | 16.51 | 16.94 | 17.46 | 18.65 | 11.81          | 12.32 | 12.75 | 13.27 | 14.46 |
|                 | 8H   | 16.18            | 16.65 | 17.11 | 17.60 | 18.80 | 11.94          | 12.42 | 12.88 | 13.36 | 14.56 |
|                 | 12H  | 16.27            | 16.70 | 17.23 | 17.66 | 18.87 | 12.01          | 12.44 | 12.96 | 13.40 | 14.60 |
| 8H              | 4H   | 15.46            | 15.94 | 16.40 | 16.88 | 18.08 | 11.68          | 12.16 | 12.62 | 13.10 | 14.30 |
|                 | 6H   | 16.02            | 16.42 | 16.99 | 17.40 | 18.60 | 12.19          | 12.59 | 13.16 | 13.57 | 14.77 |
|                 | 8H   | 16.24            | 16.58 | 17.21 | 17.56 | 18.78 | 12.38          | 12.73 | 13.35 | 13.70 | 14.92 |
|                 | 12H  | 16.38            | 16.68 | 17.35 | 17.65 | 18.92 | 12.50          | 12.80 | 13.47 | 13.77 | 15.04 |
| 12H             | 4H   | 15.42            | 15.84 | 16.37 | 16.81 | 18.01 | 11.69          | 12.12 | 12.65 | 13.08 | 14.29 |
|                 | 6H   | 16.00            | 16.35 | 16.97 | 17.32 | 18.54 | 12.24          | 12.59 | 13.22 | 13.57 | 14.79 |
|                 | 8H   | 16.22            | 16.53 | 17.20 | 17.49 | 18.76 | 12.45          | 12.76 | 13.43 | 13.73 | 14.99 |