

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: P917237

Luminaire Tested: DFN2DIP-SQ2F0-080D050US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917237  
REPORT IS A COMBINATION OF REPORTS P901325 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D050US930-FLLONL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

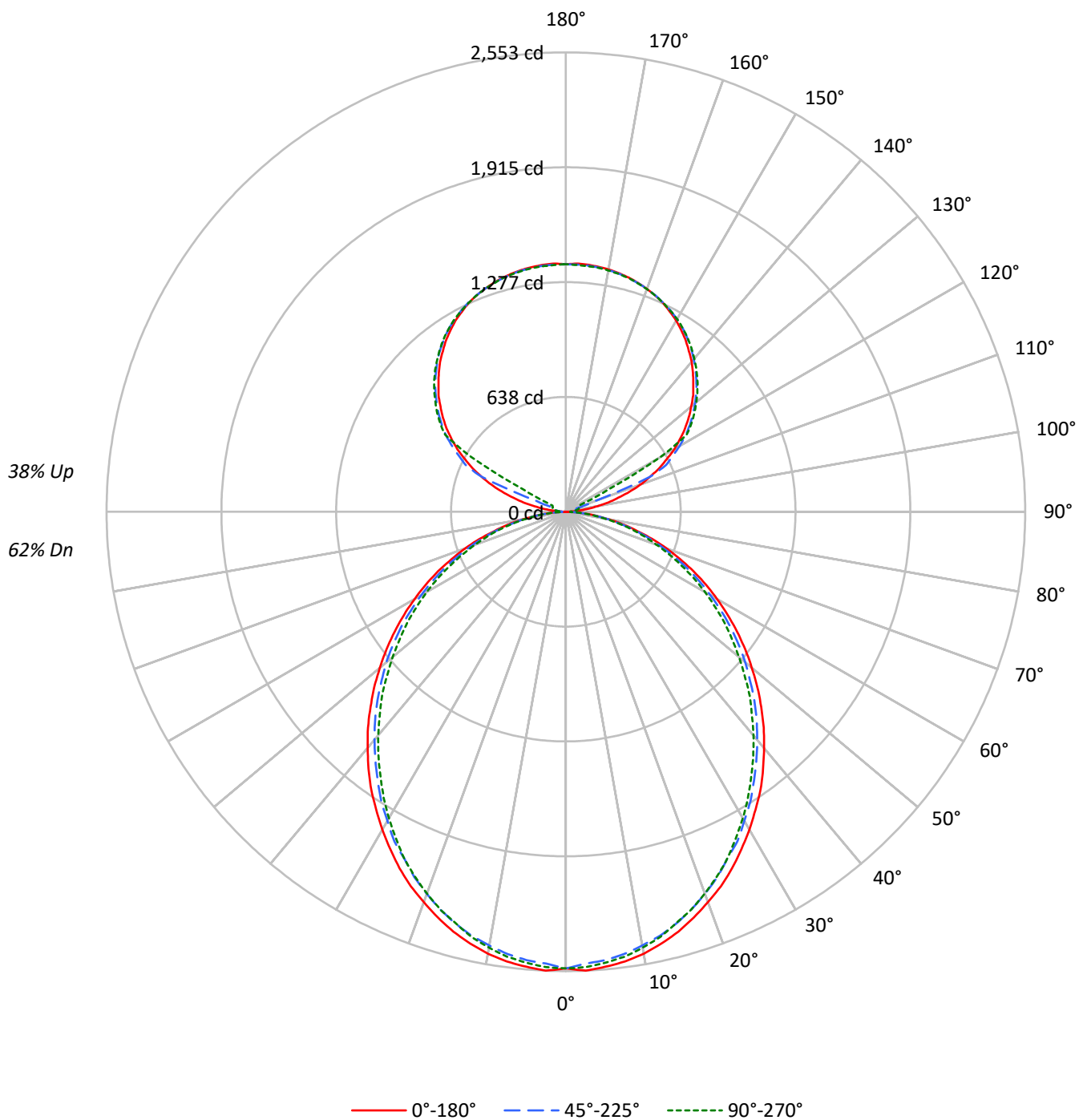
Lumens per Lamp: N/A  
Luminaire Lumens: 10492.9 lumens  
Efficiency: N/A  
Efficacy: 90.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 116.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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: P917237

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US930-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 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |
| 0   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 67 | 67 | 67 |
| 1   | 100 | 96  | 92  | 88  | 94  | 90  | 87  | 83  | 79 | 76 | 74 | 69 | 67 | 65 | 59 | 58 | 56 |
| 2   | 91  | 84  | 78  | 72  | 85  | 79  | 73  | 69  | 69 | 65 | 61 | 60 | 57 | 54 | 52 | 50 | 48 |
| 3   | 83  | 74  | 66  | 60  | 78  | 69  | 63  | 57  | 61 | 56 | 51 | 53 | 49 | 46 | 46 | 43 | 40 |
| 4   | 76  | 65  | 57  | 51  | 71  | 61  | 54  | 49  | 54 | 48 | 44 | 47 | 43 | 39 | 41 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 65  | 55  | 47  | 42  | 49 | 43 | 38 | 43 | 38 | 34 | 37 | 33 | 30 |
| 6   | 65  | 52  | 44  | 38  | 60  | 49  | 42  | 36  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 47  | 39  | 34  | 56  | 45  | 37  | 32  | 40 | 34 | 29 | 35 | 30 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 36 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 21 |
| 9   | 52  | 39  | 32  | 27  | 49  | 37  | 30  | 26  | 33 | 28 | 23 | 30 | 25 | 21 | 26 | 22 | 19 |
| 10  | 49  | 36  | 29  | 24  | 45  | 34  | 28  | 23  | 31 | 25 | 21 | 27 | 23 | 19 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5581 | 5581 | 5581 |
| 5°  | 5580 | 5491 | 5532 |
| 10° | 5525 | 5405 | 5449 |
| 15° | 5434 | 5303 | 5325 |
| 20° | 5314 | 5168 | 5197 |
| 25° | 5195 | 5008 | 5051 |
| 30° | 5049 | 4858 | 4867 |
| 35° | 4908 | 4684 | 4673 |
| 40° | 4738 | 4507 | 4488 |
| 45° | 4567 | 4329 | 4299 |
| 50° | 4381 | 4142 | 4080 |
| 55° | 4184 | 3927 | 3876 |
| 60° | 3961 | 3672 | 3643 |
| 65° | 3716 | 3406 | 3369 |
| 70° | 3406 | 3083 | 3071 |
| 75° | 2980 | 2694 | 2786 |
| 80° | 2461 | 2200 | 2263 |
| 85° | 1664 | 1389 | 1421 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4567 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 238.9   | 2.3       |
| 10°-20°   | 672.1   | 6.4       |
| 20°-30°   | 987.7   | 9.4       |
| 30°-40°   | 1147.1  | 10.9      |
| 40°-50°   | 1145.7  | 10.9      |
| 50°-60°   | 999.0   | 9.5       |
| 60°-70°   | 738.5   | 7.0       |
| 70°-80°   | 417.8   | 4.0       |
| 80°-90°   | 112.7   | 1.1       |
| 90°-100°  | 45.4    | 0.4       |
| 100°-110° | 169.1   | 1.6       |
| 110°-120° | 448.5   | 4.3       |
| 120°-130° | 743.9   | 7.1       |
| 130°-140° | 790.2   | 7.5       |
| 140°-150° | 734.4   | 7.0       |
| 150°-160° | 590.4   | 5.6       |
| 160°-170° | 380.5   | 3.6       |
| 170°-180° | 130.9   | 1.2       |
| 0°-30°    | 1898.6  | 18.1      |
| 0°-40°    | 3045.8  | 29.0      |
| 0°-60°    | 5190.5  | 49.5      |
| 0°-90°    | 6459.6  | 61.6      |
| 90°-120°  | 663.0   | 6.3       |
| 90°-150°  | 2931.5  | 27.9      |
| 90°-180°  | 4033.0  | 38.4      |
| 0°-180°   | 10492.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2538 | 2538  | 2538 | 2538  | 2538 |      |
| 5°   | 2538 | 2528  | 2501 | 2521  | 2516 | 241  |
| 15°  | 2416 | 2402  | 2370 | 2379  | 2367 | 680  |
| 25°  | 2186 | 2167  | 2126 | 2130  | 2126 | 1006 |
| 35°  | 1886 | 1862  | 1823 | 1808  | 1796 | 1178 |
| 45°  | 1535 | 1518  | 1481 | 1455  | 1445 | 1185 |
| 55°  | 1162 | 1147  | 1118 | 1088  | 1076 | 1039 |
| 65°  | 784  | 769   | 744  | 722   | 710  | 775  |
| 75°  | 410  | 405   | 393  | 378   | 383  | 438  |
| 85°  | 100  | 98    | 95   | 88    | 85   | 112  |
| 90°  | 1    | 12    | 20   | 25    | 27   | 10   |
| 95°  | 65   | 32    | 39   | 44    | 43   | 77   |
| 105° | 303  | 333   | 61   | 72    | 76   | 323  |
| 115° | 572  | 589   | 614  | 153   | 82   | 564  |
| 125° | 809  | 822   | 841  | 848   | 851  | 722  |
| 135° | 1002 | 1018  | 1026 | 1036  | 1034 | 774  |
| 145° | 1162 | 1161  | 1178 | 1185  | 1180 | 727  |
| 155° | 1279 | 1270  | 1282 | 1288  | 1280 | 589  |
| 165° | 1348 | 1342  | 1345 | 1352  | 1345 | 381  |
| 175° | 1379 | 1372  | 1374 | 1381  | 1371 | 131  |
| 180° | 1376 | 1376  | 1376 | 1376  | 1376 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2537.9 | 2537.9 | 2537.9 | 2537.9 | 2537.9 |
| 2.5°   | 2552.6 | 2540.5 | 2513.6 | 2537.9 | 2533.2 |
| 5°     | 2537.9 | 2528.3 | 2501.4 | 2520.8 | 2516.2 |
| 7.5°   | 2520.8 | 2506.3 | 2479.4 | 2499.1 | 2494.2 |
| 10°    | 2494.2 | 2477.0 | 2447.8 | 2467.2 | 2460.0 |
| 12.5°  | 2457.4 | 2442.9 | 2413.6 | 2425.8 | 2420.9 |
| 15°    | 2416.0 | 2401.5 | 2369.6 | 2379.4 | 2367.3 |
| 17.5°  | 2364.7 | 2350.2 | 2318.3 | 2330.5 | 2318.3 |
| 20°    | 2308.5 | 2294.0 | 2259.8 | 2267.1 | 2257.5 |
| 22.5°  | 2252.6 | 2230.6 | 2198.7 | 2198.7 | 2193.8 |
| 25°    | 2186.5 | 2167.1 | 2125.7 | 2130.4 | 2125.7 |
| 27.5°  | 2113.3 | 2096.2 | 2064.6 | 2057.3 | 2045.2 |
| 30°    | 2040.3 | 2020.6 | 1984.1 | 1976.9 | 1967.0 |
| 32.5°  | 1962.1 | 1947.6 | 1908.5 | 1893.7 | 1883.9 |
| 35°    | 1886.4 | 1862.1 | 1823.0 | 1808.2 | 1796.1 |
| 37.5°  | 1801.0 | 1779.0 | 1739.9 | 1722.8 | 1710.7 |
| 40°    | 1713.3 | 1693.5 | 1654.5 | 1632.7 | 1622.9 |
| 42.5°  | 1627.8 | 1608.1 | 1569.3 | 1544.7 | 1530.2 |
| 45°    | 1535.1 | 1518.0 | 1481.2 | 1454.6 | 1444.8 |
| 47.5°  | 1444.8 | 1427.7 | 1388.5 | 1361.6 | 1347.1 |
| 50°    | 1349.5 | 1337.3 | 1303.1 | 1268.9 | 1256.8 |
| 52.5°  | 1256.8 | 1239.7 | 1208.1 | 1181.2 | 1164.1 |
| 55°    | 1161.7 | 1147.0 | 1117.8 | 1088.5 | 1076.3 |
| 57.5°  | 1066.5 | 1054.3 | 1022.5 | 993.2  | 983.3  |
| 60°    | 971.2  | 961.6  | 927.4  | 900.5  | 893.2  |
| 62.5°  | 878.5  | 861.4  | 837.1  | 812.8  | 802.9  |
| 65°    | 783.5  | 768.7  | 744.4  | 722.4  | 710.2  |
| 67.5°  | 685.8  | 673.4  | 651.7  | 634.6  | 624.8  |
| 70°    | 595.5  | 585.6  | 563.7  | 546.6  | 537.0  |
| 72.5°  | 502.8  | 493.0  | 480.8  | 463.7  | 456.5  |
| 75°    | 409.9  | 405.2  | 392.8  | 378.3  | 383.2  |
| 77.5°  | 327.0  | 317.2  | 312.3  | 305.0  | 297.7  |
| 80°    | 244.2  | 241.6  | 236.7  | 229.4  | 224.5  |
| 82.5°  | 166.0  | 166.0  | 163.6  | 153.8  | 153.8  |
| 85°    | 100.0  | 97.6   | 95.3   | 87.8   | 85.4   |
| 87.5°  | 44.0   | 39.1   | 34.2   | 26.9   | 24.4   |
| 90°    | 1.0    | 11.9   | 19.9   | 24.9   | 26.8   |
| 92.5°  | 24.9   | 21.0   | 23.9   | 25.9   | 26.8   |
| 95°    | 64.7   | 31.8   | 38.8   | 43.9   | 42.8   |
| 97.5°  | 116.4  | 34.9   | 50.7   | 53.8   | 54.7   |
| 100°   | 176.3  | 39.9   | 56.7   | 64.7   | 66.7   |
| 102.5° | 241.9  | 239.9  | 58.8   | 69.6   | 72.7   |
| 105°   | 302.6  | 332.6  | 60.7   | 71.7   | 75.7   |
| 107.5° | 373.3  | 398.1  | 62.8   | 73.6   | 77.7   |
| 110°   | 441.1  | 461.9  | 174.2  | 74.7   | 78.6   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.8  | 522.6  | 505.7  | 76.6   | 79.7   |
| 115°   | 572.4  | 589.3  | 614.2  | 153.4  | 81.7   |
| 117.5° | 631.1  | 651.0  | 668.1  | 525.5  | 264.8  |
| 120°   | 696.8  | 711.8  | 729.7  | 741.7  | 607.2  |
| 122.5° | 752.5  | 768.5  | 788.5  | 794.4  | 795.5  |
| 125°   | 809.3  | 822.3  | 841.2  | 848.2  | 851.2  |
| 127.5° | 861.0  | 875.0  | 890.1  | 899.9  | 900.9  |
| 130°   | 909.9  | 925.9  | 936.7  | 947.7  | 946.8  |
| 132.5° | 959.7  | 972.7  | 983.5  | 992.5  | 991.6  |
| 135°   | 1001.5 | 1017.5 | 1026.3 | 1036.4 | 1034.4 |
| 137.5° | 1045.2 | 1057.2 | 1067.2 | 1077.2 | 1074.2 |
| 140°   | 1088.0 | 1096.1 | 1106.9 | 1115.9 | 1111.0 |
| 142.5° | 1124.0 | 1131.0 | 1143.9 | 1151.8 | 1146.8 |
| 145°   | 1161.8 | 1160.7 | 1177.6 | 1184.6 | 1179.7 |
| 147.5° | 1194.6 | 1191.6 | 1208.5 | 1213.5 | 1209.6 |
| 150°   | 1226.5 | 1219.5 | 1235.4 | 1241.4 | 1236.4 |
| 152.5° | 1253.3 | 1245.4 | 1260.3 | 1266.3 | 1259.3 |
| 155°   | 1279.2 | 1270.3 | 1282.2 | 1288.2 | 1280.3 |
| 157.5° | 1300.1 | 1292.2 | 1301.1 | 1308.1 | 1300.1 |
| 160°   | 1318.1 | 1312.1 | 1318.1 | 1324.0 | 1317.0 |
| 162.5° | 1333.9 | 1328.0 | 1332.9 | 1339.9 | 1331.0 |
| 165°   | 1347.9 | 1342.0 | 1344.9 | 1351.8 | 1344.9 |
| 167.5° | 1358.9 | 1352.8 | 1355.9 | 1362.9 | 1353.9 |
| 170°   | 1367.8 | 1361.8 | 1363.8 | 1370.8 | 1361.8 |
| 172.5° | 1373.8 | 1367.8 | 1369.9 | 1376.8 | 1367.8 |
| 175°   | 1378.8 | 1371.7 | 1373.8 | 1380.7 | 1370.8 |
| 177.5° | 1380.7 | 1373.8 | 1374.8 | 1381.8 | 1372.8 |
| 180°   | 1375.7 | 1375.7 | 1375.7 | 1375.7 | 1375.7 |

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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 | 14.13            | 15.11 | 14.98 | 15.98 | 17.08 | 13.69          | 14.66 | 14.54 | 15.54 | 16.63 |
|                 | 3H   | 15.78            | 16.66 | 16.65 | 17.54 | 18.66 | 15.29          | 16.17 | 16.16 | 17.05 | 18.17 |
|                 | 4H   | 16.36            | 17.19 | 17.24 | 18.08 | 19.21 | 15.87          | 16.70 | 16.75 | 17.59 | 18.72 |
|                 | 6H   | 16.75            | 17.52 | 17.65 | 18.41 | 19.56 | 16.25          | 17.02 | 17.15 | 17.91 | 19.06 |
|                 | 8H   | 16.85            | 17.58 | 17.75 | 18.50 | 19.64 | 16.35          | 17.08 | 17.25 | 17.99 | 19.14 |
|                 | 12H  | 16.90            | 17.59 | 17.81 | 18.50 | 19.67 | 16.39          | 17.08 | 17.30 | 17.99 | 19.16 |
| 4H              | 2H   | 14.60            | 15.43 | 15.48 | 16.31 | 17.45 | 14.24          | 15.07 | 15.13 | 15.96 | 17.09 |
|                 | 3H   | 16.45            | 17.14 | 17.35 | 18.06 | 19.21 | 16.04          | 16.73 | 16.94 | 17.65 | 18.80 |
|                 | 4H   | 17.15            | 17.78 | 18.06 | 18.70 | 19.87 | 16.73          | 17.36 | 17.64 | 18.28 | 19.45 |
|                 | 6H   | 17.66            | 18.20 | 18.58 | 19.14 | 20.32 | 17.23          | 17.77 | 18.15 | 18.71 | 19.89 |
|                 | 8H   | 17.80            | 18.31 | 18.72 | 19.24 | 20.43 | 17.36          | 17.87 | 18.29 | 18.81 | 20.00 |
|                 | 12H  | 17.87            | 18.33 | 18.81 | 19.28 | 20.48 | 17.42          | 17.88 | 18.37 | 18.83 | 20.03 |
| 8H              | 4H   | 17.35            | 17.86 | 18.27 | 18.79 | 19.98 | 16.97          | 17.48 | 17.89 | 18.41 | 19.60 |
|                 | 6H   | 17.96            | 18.38 | 18.91 | 19.36 | 20.55 | 17.58          | 18.00 | 18.53 | 18.97 | 20.16 |
|                 | 8H   | 18.17            | 18.54 | 19.13 | 19.51 | 20.71 | 17.78          | 18.15 | 18.74 | 19.12 | 20.32 |
|                 | 12H  | 18.29            | 18.62 | 19.26 | 19.58 | 20.84 | 17.88          | 18.21 | 18.85 | 19.17 | 20.43 |
| 12H             | 4H   | 17.34            | 17.80 | 18.28 | 18.75 | 19.94 | 16.97          | 17.43 | 17.91 | 18.38 | 19.57 |
|                 | 6H   | 17.99            | 18.36 | 18.95 | 19.33 | 20.53 | 17.61          | 17.99 | 18.57 | 18.95 | 20.16 |
|                 | 8H   | 18.22            | 18.55 | 19.18 | 19.51 | 20.76 | 17.84          | 18.17 | 18.80 | 19.13 | 20.38 |