

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: P914884

Luminaire Tested: DFN2DIP-SQ4F0-070D060US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914884  
REPORT IS A COMBINATION OF REPORTS P900061 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-070D060US927-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

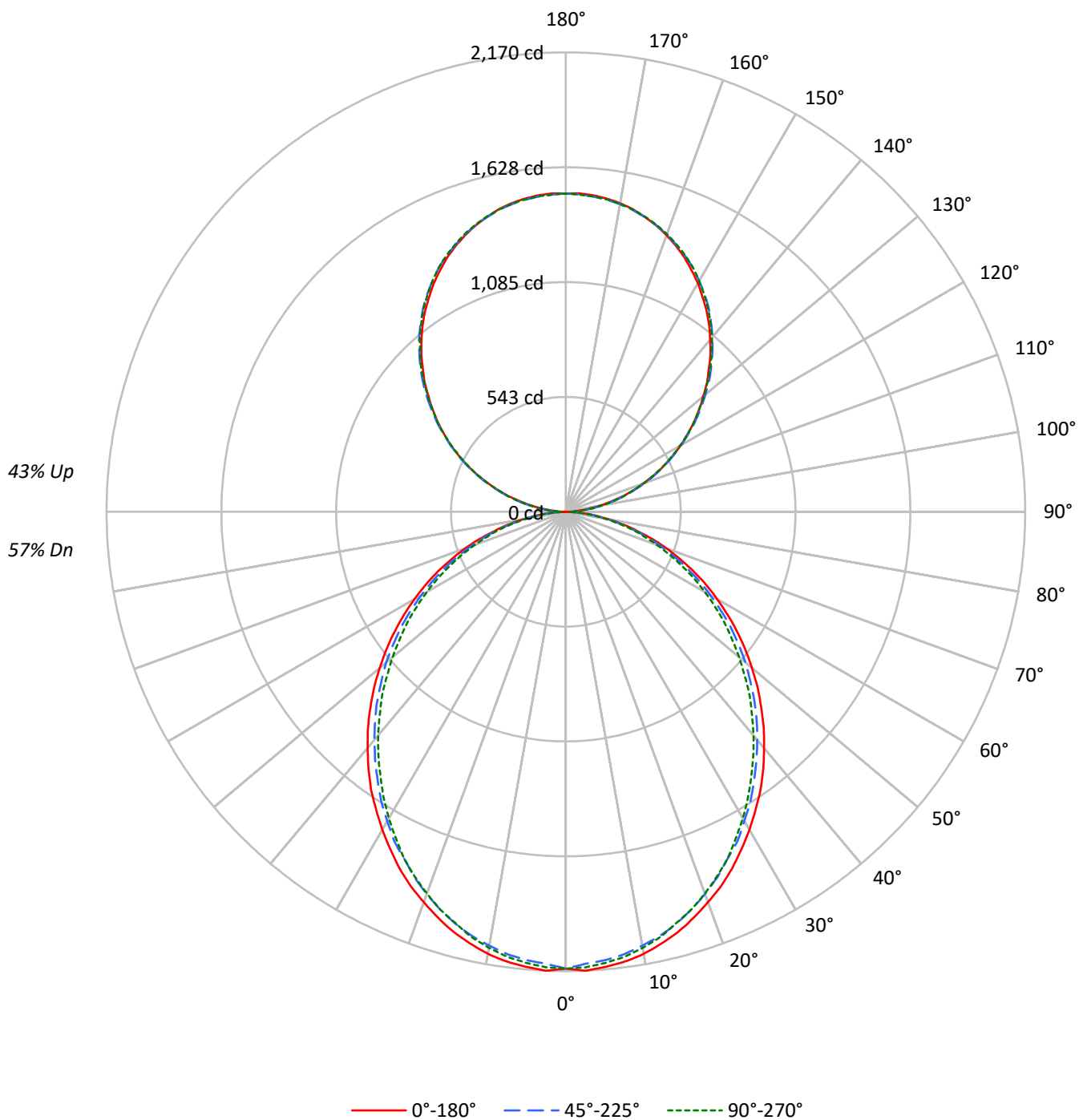
Lumens per Lamp: N/A  
Luminaire Lumens: 9696.3 lumens  
Efficiency: N/A  
Efficacy: 91.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 106.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US927-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P914884

CATALOG NUMBER: DFN2DIP-SQ4F0-070D060US927-FLLFL

**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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 99  | 95  | 91  | 87  | 92  | 88  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 55 | 54 | 53 |
| 2   | 90  | 83  | 77  | 71  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 57 | 54 | 52 | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 60  | 76  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 75  | 65  | 57  | 50  | 70  | 60  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 37 | 38 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 32 | 35 | 31 | 28 |
| 6   | 64  | 52  | 43  | 38  | 59  | 48  | 41  | 36  | 42 | 36 | 32 | 37 | 32 | 28 | 31 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 31  | 38 | 33 | 28 | 33 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 42  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 24 | 21 | 18 |
| 10  | 48  | 36  | 28  | 23  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1514 | 1514 | 1514 |
| 5°  | 1516 | 1493 | 1503 |
| 10° | 1504 | 1473 | 1483 |
| 15° | 1482 | 1449 | 1452 |
| 20° | 1452 | 1416 | 1420 |
| 25° | 1422 | 1376 | 1383 |
| 30° | 1385 | 1339 | 1335 |
| 35° | 1350 | 1295 | 1285 |
| 40° | 1306 | 1251 | 1237 |
| 45° | 1263 | 1206 | 1189 |
| 50° | 1215 | 1160 | 1132 |
| 55° | 1166 | 1106 | 1080 |
| 60° | 1110 | 1041 | 1021 |
| 65° | 1049 | 975  | 950  |
| 70° | 971  | 894  | 875  |
| 75° | 863  | 798  | 806  |
| 80° | 733  | 675  | 673  |
| 85° | 530  | 462  | 452  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1263 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 203.1  | 2.1       |
| 10°-20°   | 571.4  | 5.9       |
| 20°-30°   | 839.7  | 8.7       |
| 30°-40°   | 975.3  | 10.1      |
| 40°-50°   | 974.1  | 10.0      |
| 50°-60°   | 849.4  | 8.8       |
| 60°-70°   | 627.9  | 6.5       |
| 70°-80°   | 355.2  | 3.7       |
| 80°-90°   | 98.0   | 1.0       |
| 90°-100°  | 93.0   | 1.0       |
| 100°-110° | 295.6  | 3.0       |
| 110°-120° | 505.8  | 5.2       |
| 120°-130° | 665.2  | 6.9       |
| 130°-140° | 746.6  | 7.7       |
| 140°-150° | 732.2  | 7.6       |
| 150°-160° | 614.2  | 6.3       |
| 160°-170° | 407.3  | 4.2       |
| 170°-180° | 142.4  | 1.5       |
| 0°-30°    | 1614.2 | 16.6      |
| 0°-40°    | 2589.5 | 26.7      |
| 0°-60°    | 4412.9 | 45.5      |
| 0°-90°    | 5494.1 | 56.7      |
| 90°-120°  | 894.4  | 9.2       |
| 90°-150°  | 3038.4 | 31.3      |
| 90°-180°  | 4202.0 | 43.3      |
| 0°-180°   | 9696.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2158 | 2158  | 2158 | 2158  | 2158 |      |
| 5°   | 2158 | 2150  | 2127 | 2143  | 2139 | 205  |
| 15°  | 2054 | 2042  | 2015 | 2023  | 2013 | 578  |
| 25°  | 1859 | 1842  | 1807 | 1811  | 1807 | 855  |
| 35°  | 1604 | 1583  | 1550 | 1537  | 1527 | 1002 |
| 45°  | 1305 | 1291  | 1259 | 1237  | 1228 | 1007 |
| 55°  | 988  | 975   | 950  | 925   | 915  | 883  |
| 65°  | 666  | 654   | 633  | 614   | 604  | 659  |
| 75°  | 348  | 344   | 334  | 322   | 326  | 372  |
| 85°  | 85   | 83    | 81   | 75    | 73   | 95   |
| 90°  | 1    | 16    | 44   | 42    | 43   | 9    |
| 95°  | 66   | 79    | 81   | 81    | 79   | 74   |
| 105° | 273  | 276   | 279  | 282   | 282  | 288  |
| 115° | 508  | 515   | 512  | 511   | 508  | 502  |
| 125° | 738  | 750   | 746  | 742   | 740  | 660  |
| 135° | 955  | 969   | 972  | 970   | 967  | 738  |
| 145° | 1159 | 1168  | 1176 | 1177  | 1172 | 724  |
| 155° | 1326 | 1329  | 1333 | 1340  | 1336 | 610  |
| 165° | 1442 | 1441  | 1441 | 1450  | 1443 | 407  |
| 175° | 1500 | 1497  | 1494 | 1503  | 1496 | 143  |
| 180° | 1503 | 1503  | 1503 | 1503  | 1503 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2157.7 | 2157.7 | 2157.7 | 2157.7 | 2157.7 |
| 2.5°   | 2170.3 | 2159.9 | 2137.0 | 2157.7 | 2153.7 |
| 5°     | 2157.7 | 2149.6 | 2126.7 | 2143.2 | 2139.2 |
| 7.5°   | 2143.2 | 2130.8 | 2107.9 | 2124.7 | 2120.5 |
| 10°    | 2120.5 | 2105.9 | 2081.1 | 2097.6 | 2091.4 |
| 12.5°  | 2089.2 | 2076.9 | 2052.1 | 2062.4 | 2058.2 |
| 15°    | 2054.0 | 2041.7 | 2014.6 | 2023.0 | 2012.6 |
| 17.5°  | 2010.4 | 1998.1 | 1971.0 | 1981.4 | 1971.0 |
| 20°    | 1962.6 | 1950.4 | 1921.3 | 1927.5 | 1919.3 |
| 22.5°  | 1915.1 | 1896.4 | 1869.3 | 1869.3 | 1865.1 |
| 25°    | 1859.0 | 1842.5 | 1807.3 | 1811.2 | 1807.3 |
| 27.5°  | 1796.7 | 1782.2 | 1755.3 | 1749.1 | 1738.8 |
| 30°    | 1734.6 | 1717.8 | 1686.9 | 1680.7 | 1672.3 |
| 32.5°  | 1668.1 | 1655.8 | 1622.5 | 1610.0 | 1601.6 |
| 35°    | 1603.8 | 1583.2 | 1549.9 | 1537.4 | 1527.0 |
| 37.5°  | 1531.2 | 1512.5 | 1479.2 | 1464.7 | 1454.4 |
| 40°    | 1456.6 | 1439.9 | 1406.6 | 1388.1 | 1379.7 |
| 42.5°  | 1383.9 | 1367.2 | 1334.2 | 1313.3 | 1300.9 |
| 45°    | 1305.1 | 1290.6 | 1259.3 | 1236.7 | 1228.3 |
| 47.5°  | 1228.3 | 1213.8 | 1180.5 | 1157.6 | 1145.3 |
| 50°    | 1147.3 | 1136.9 | 1107.9 | 1078.9 | 1068.5 |
| 52.5°  | 1068.5 | 1054.0 | 1027.1 | 1004.2 | 989.7  |
| 55°    | 987.7  | 975.2  | 950.3  | 925.4  | 915.0  |
| 57.5°  | 906.7  | 896.4  | 869.3  | 844.4  | 836.1  |
| 60°    | 825.7  | 817.5  | 788.5  | 765.6  | 759.5  |
| 62.5°  | 746.9  | 732.4  | 711.7  | 691.0  | 682.6  |
| 65°    | 666.1  | 653.5  | 632.9  | 614.2  | 603.8  |
| 67.5°  | 583.1  | 572.6  | 554.1  | 539.6  | 531.2  |
| 70°    | 506.3  | 498.0  | 479.2  | 464.7  | 456.5  |
| 72.5°  | 427.5  | 419.1  | 408.8  | 394.3  | 388.1  |
| 75°    | 348.5  | 344.5  | 333.9  | 321.6  | 325.8  |
| 77.5°  | 278.1  | 269.7  | 265.5  | 259.3  | 253.2  |
| 80°    | 207.6  | 205.4  | 201.2  | 195.0  | 190.8  |
| 82.5°  | 141.1  | 141.1  | 139.1  | 130.8  | 130.8  |
| 85°    | 85.0   | 83.0   | 81.0   | 74.6   | 72.6   |
| 87.5°  | 37.4   | 33.3   | 29.1   | 22.9   | 20.7   |
| 90°    | 1.3    | 16.3   | 44.4   | 41.7   | 43.0   |
| 92.5°  | 28.1   | 38.1   | 39.5   | 40.8   | 40.8   |
| 95°    | 66.1   | 78.8   | 81.1   | 81.1   | 78.8   |
| 97.5°  | 110.1  | 121.9  | 126.9  | 126.9  | 126.9  |
| 100°   | 160.9  | 171.3  | 174.9  | 174.9  | 173.6  |
| 102.5° | 214.4  | 222.0  | 227.0  | 228.4  | 227.0  |
| 105°   | 272.8  | 276.5  | 279.2  | 281.5  | 281.5  |
| 107.5° | 330.8  | 336.3  | 336.3  | 337.2  | 330.8  |
| 110°   | 387.1  | 394.3  | 394.3  | 394.3  | 390.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 447.7  | 455.4  | 454.1  | 450.4  | 447.7  |
| 115°   | 507.6  | 514.8  | 512.5  | 511.2  | 507.6  |
| 117.5° | 567.0  | 576.9  | 570.5  | 567.0  | 563.3  |
| 120°   | 626.8  | 636.8  | 626.8  | 626.8  | 622.7  |
| 122.5° | 681.1  | 693.8  | 687.5  | 683.9  | 681.1  |
| 125°   | 738.2  | 749.6  | 745.9  | 741.9  | 740.5  |
| 127.5° | 794.0  | 808.0  | 803.0  | 797.6  | 794.0  |
| 130°   | 846.1  | 862.4  | 860.2  | 857.5  | 852.5  |
| 132.5° | 904.6  | 917.3  | 918.1  | 911.8  | 908.2  |
| 135°   | 954.9  | 968.9  | 971.6  | 970.3  | 966.6  |
| 137.5° | 1011.1 | 1022.4 | 1024.7 | 1023.7 | 1018.3 |
| 140°   | 1060.5 | 1071.8 | 1078.2 | 1078.2 | 1073.2 |
| 142.5° | 1111.2 | 1122.5 | 1126.2 | 1127.5 | 1122.5 |
| 145°   | 1159.3 | 1168.3 | 1175.6 | 1176.9 | 1172.0 |
| 147.5° | 1202.3 | 1213.6 | 1219.1 | 1221.3 | 1216.3 |
| 150°   | 1246.7 | 1254.4 | 1259.4 | 1263.4 | 1259.4 |
| 152.5° | 1286.1 | 1293.9 | 1300.2 | 1305.2 | 1300.2 |
| 155°   | 1325.6 | 1329.2 | 1333.2 | 1339.7 | 1335.5 |
| 157.5° | 1359.5 | 1362.3 | 1364.5 | 1373.6 | 1367.3 |
| 160°   | 1390.0 | 1392.7 | 1394.0 | 1401.7 | 1396.3 |
| 162.5° | 1418.0 | 1418.0 | 1419.4 | 1428.0 | 1421.6 |
| 165°   | 1442.0 | 1440.7 | 1440.7 | 1449.8 | 1443.4 |
| 167.5° | 1463.8 | 1459.8 | 1459.8 | 1468.8 | 1462.4 |
| 170°   | 1480.1 | 1476.5 | 1475.1 | 1484.2 | 1476.5 |
| 172.5° | 1491.4 | 1487.8 | 1486.4 | 1495.5 | 1487.8 |
| 175°   | 1500.5 | 1496.9 | 1494.1 | 1503.2 | 1495.5 |
| 177.5° | 1505.5 | 1501.9 | 1499.1 | 1506.8 | 1499.1 |
| 180°   | 1503.2 | 1503.2 | 1503.2 | 1503.2 | 1503.2 |

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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 | 9.32             | 10.24 | 10.22 | 11.16 | 12.33 | 8.87           | 9.80  | 9.77  | 10.72 | 11.89 |
|                 | 3H   | 10.99            | 11.82 | 11.90 | 12.74 | 13.94 | 10.50          | 11.33 | 11.41 | 12.25 | 13.45 |
|                 | 4H   | 11.58            | 12.37 | 12.51 | 13.30 | 14.50 | 11.09          | 11.87 | 12.01 | 12.80 | 14.01 |
|                 | 6H   | 11.99            | 12.71 | 12.92 | 13.65 | 14.87 | 11.49          | 12.21 | 12.42 | 13.15 | 14.37 |
|                 | 8H   | 12.10            | 12.79 | 13.04 | 13.74 | 14.96 | 11.59          | 12.28 | 12.54 | 13.24 | 14.46 |
|                 | 12H  | 12.15            | 12.80 | 13.10 | 13.75 | 15.00 | 11.64          | 12.29 | 12.59 | 13.24 | 14.49 |
| 4H              | 2H   | 9.79             | 10.57 | 10.72 | 11.50 | 12.71 | 9.43           | 10.22 | 10.36 | 11.15 | 12.36 |
|                 | 3H   | 11.66            | 12.32 | 12.60 | 13.28 | 14.50 | 11.26          | 11.91 | 12.20 | 12.87 | 14.10 |
|                 | 4H   | 12.38            | 12.98 | 13.33 | 13.94 | 15.19 | 11.96          | 12.56 | 12.91 | 13.52 | 14.76 |
|                 | 6H   | 12.91            | 13.42 | 13.87 | 14.40 | 15.65 | 12.47          | 12.99 | 13.44 | 13.97 | 15.22 |
|                 | 8H   | 13.06            | 13.54 | 14.03 | 14.52 | 15.78 | 12.62          | 13.10 | 13.59 | 14.08 | 15.34 |
|                 | 12H  | 13.14            | 13.57 | 14.12 | 14.57 | 15.83 | 12.69          | 13.12 | 13.67 | 14.12 | 15.38 |
| 8H              | 4H   | 12.59            | 13.07 | 13.55 | 14.04 | 15.30 | 12.21          | 12.69 | 13.17 | 13.67 | 14.93 |
|                 | 6H   | 13.22            | 13.62 | 14.22 | 14.64 | 15.90 | 12.84          | 13.24 | 13.83 | 14.26 | 15.51 |
|                 | 8H   | 13.45            | 13.80 | 14.45 | 14.81 | 16.08 | 13.06          | 13.41 | 14.06 | 14.41 | 15.69 |
|                 | 12H  | 13.59            | 13.90 | 14.59 | 14.90 | 16.22 | 13.18          | 13.49 | 14.18 | 14.48 | 15.81 |
| 12H             | 4H   | 12.57            | 13.01 | 13.56 | 14.00 | 15.27 | 12.21          | 12.64 | 13.19 | 13.63 | 14.90 |
|                 | 6H   | 13.26            | 13.61 | 14.26 | 14.61 | 15.89 | 12.88          | 13.24 | 13.88 | 14.24 | 15.52 |
|                 | 8H   | 13.50            | 13.81 | 14.51 | 14.81 | 16.14 | 13.12          | 13.43 | 14.13 | 14.43 | 15.75 |