

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: P925328

Luminaire Tested: DFN2DIP-SQ2F0-040D060US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925328  
REPORT IS A COMBINATION OF REPORTS P899809 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-040D060US950-FLLFLL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

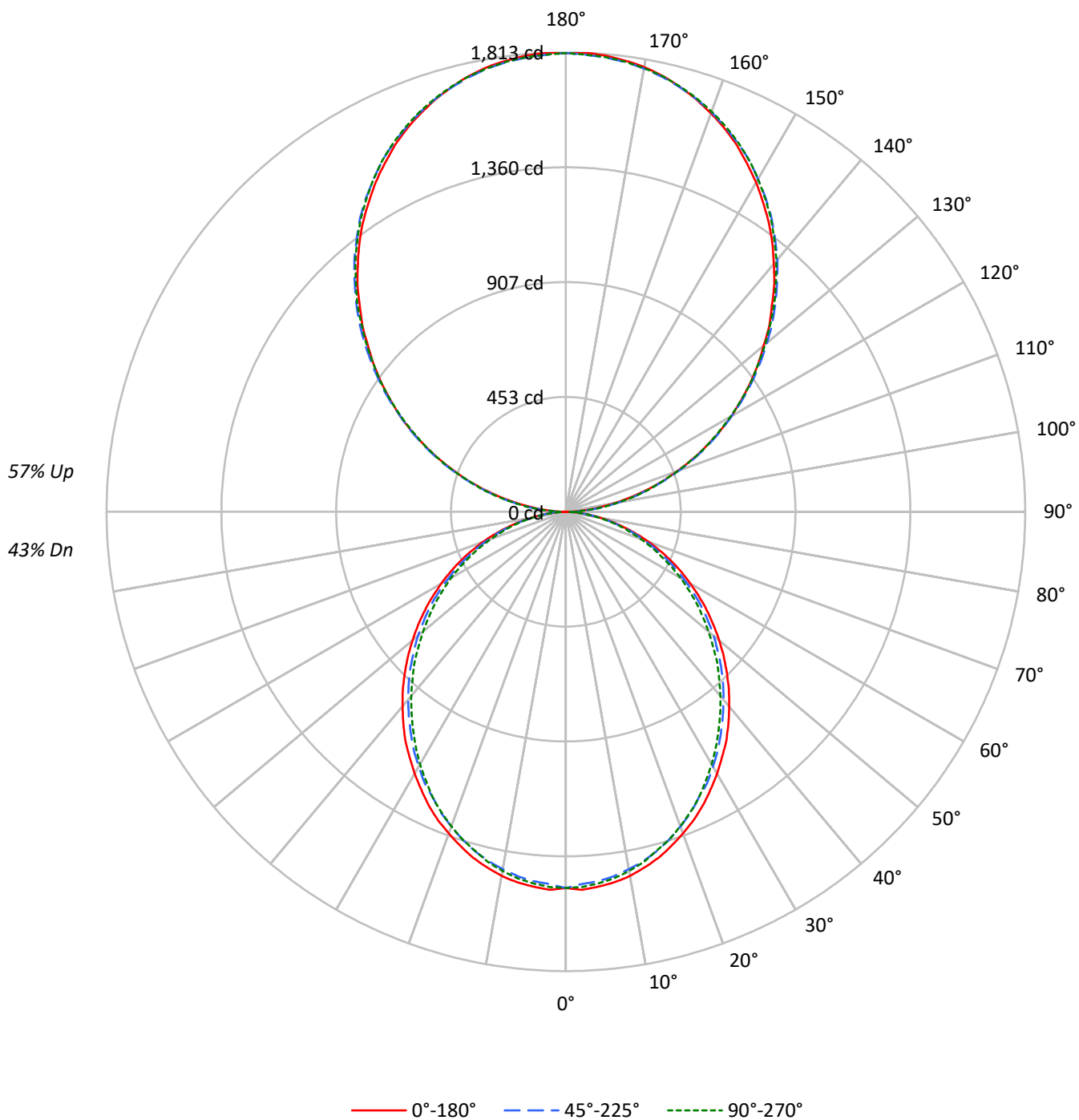
Lumens per Lamp: N/A  
Luminaire Lumens: 8843.6 lumens  
Efficiency: N/A  
Efficacy: 111.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 79.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ2F0-040D060US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925328

CATALOG NUMBER: DFN2DIP-SQ2F0-040D060US950-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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 49 | 49 | 49 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 69 | 67 | 65 | 56 | 54 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 73 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 38 | 37 | 35 |
| 3   | 80  | 70  | 63  | 57  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 37 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 30 | 28 | 26 |
| 5   | 67  | 56  | 47  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 27 | 25 | 22 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 31  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 24 | 21 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 15 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3265 | 3265 | 3265 |
| 5°  | 3264 | 3212 | 3237 |
| 10° | 3232 | 3162 | 3188 |
| 15° | 3179 | 3103 | 3115 |
| 20° | 3109 | 3023 | 3041 |
| 25° | 3040 | 2930 | 2955 |
| 30° | 2954 | 2842 | 2848 |
| 35° | 2872 | 2740 | 2734 |
| 40° | 2772 | 2637 | 2626 |
| 45° | 2672 | 2533 | 2515 |
| 50° | 2563 | 2423 | 2386 |
| 55° | 2448 | 2297 | 2268 |
| 60° | 2317 | 2148 | 2131 |
| 65° | 2174 | 1993 | 1971 |
| 70° | 1992 | 1804 | 1797 |
| 75° | 1743 | 1576 | 1630 |
| 80° | 1439 | 1286 | 1324 |
| 85° | 973  | 812  | 832  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2672 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 139.8  | 1.6       |
| 10°-20°   | 393.2  | 4.4       |
| 20°-30°   | 577.9  | 6.5       |
| 30°-40°   | 671.2  | 7.6       |
| 40°-50°   | 670.3  | 7.6       |
| 50°-60°   | 584.5  | 6.6       |
| 60°-70°   | 432.1  | 4.9       |
| 70°-80°   | 244.5  | 2.8       |
| 80°-90°   | 69.7   | 0.8       |
| 90°-100°  | 112.0  | 1.3       |
| 100°-110° | 355.9  | 4.0       |
| 110°-120° | 609.1  | 6.9       |
| 120°-130° | 801.1  | 9.1       |
| 130°-140° | 899.2  | 10.2      |
| 140°-150° | 881.7  | 10.0      |
| 150°-160° | 739.6  | 8.4       |
| 160°-170° | 490.5  | 5.5       |
| 170°-180° | 171.4  | 1.9       |
| 0°-30°    | 1110.8 | 12.6      |
| 0°-40°    | 1782.0 | 20.1      |
| 0°-60°    | 3036.8 | 34.3      |
| 0°-90°    | 3783.0 | 42.8      |
| 90°-120°  | 1077.0 | 12.2      |
| 90°-150°  | 3659.0 | 41.4      |
| 90°-180°  | 5061.0 | 57.2      |
| 0°-180°   | 8843.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1485 | 1485  | 1485 | 1485  | 1485 |      |
| 5°   | 1485 | 1479  | 1463 | 1475  | 1472 | 141  |
| 15°  | 1413 | 1405  | 1386 | 1392  | 1385 | 398  |
| 25°  | 1279 | 1268  | 1244 | 1246  | 1244 | 589  |
| 35°  | 1104 | 1090  | 1067 | 1058  | 1051 | 689  |
| 45°  | 898  | 888   | 867  | 851   | 845  | 693  |
| 55°  | 680  | 671   | 654  | 637   | 630  | 608  |
| 65°  | 458  | 450   | 436  | 423   | 416  | 453  |
| 75°  | 240  | 237   | 230  | 221   | 224  | 256  |
| 85°  | 58   | 57    | 56   | 51    | 50   | 65   |
| 90°  | 2    | 20    | 54   | 50    | 52   | 9    |
| 95°  | 80   | 95    | 98   | 98    | 95   | 89   |
| 105° | 329  | 333   | 336  | 339   | 339  | 347  |
| 115° | 611  | 620   | 617  | 616   | 611  | 605  |
| 125° | 889  | 903   | 898  | 893   | 892  | 794  |
| 135° | 1150 | 1167  | 1170 | 1168  | 1164 | 889  |
| 145° | 1396 | 1407  | 1416 | 1417  | 1411 | 872  |
| 155° | 1596 | 1601  | 1606 | 1613  | 1608 | 735  |
| 165° | 1737 | 1735  | 1735 | 1746  | 1738 | 490  |
| 175° | 1807 | 1803  | 1799 | 1810  | 1801 | 172  |
| 180° | 1810 | 1810  | 1810 | 1810  | 1810 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1484.8 | 1484.8 | 1484.8 | 1484.8 | 1484.8 |
| 2.5°   | 1493.5 | 1486.3 | 1470.6 | 1484.8 | 1482.1 |
| 5°     | 1484.8 | 1479.2 | 1463.4 | 1474.8 | 1472.1 |
| 7.5°   | 1474.8 | 1466.3 | 1450.6 | 1462.1 | 1459.2 |
| 10°    | 1459.2 | 1449.2 | 1432.1 | 1443.5 | 1439.2 |
| 12.5°  | 1437.7 | 1429.2 | 1412.1 | 1419.3 | 1416.3 |
| 15°    | 1413.4 | 1405.0 | 1386.4 | 1392.1 | 1385.0 |
| 17.5°  | 1383.5 | 1375.0 | 1356.4 | 1363.5 | 1356.4 |
| 20°    | 1350.6 | 1342.1 | 1322.1 | 1326.3 | 1320.8 |
| 22.5°  | 1317.9 | 1305.0 | 1286.4 | 1286.4 | 1283.5 |
| 25°    | 1279.2 | 1267.9 | 1243.6 | 1246.4 | 1243.6 |
| 27.5°  | 1236.4 | 1226.4 | 1208.0 | 1203.7 | 1196.6 |
| 30°    | 1193.6 | 1182.2 | 1160.8 | 1156.5 | 1150.8 |
| 32.5°  | 1147.9 | 1139.5 | 1116.6 | 1108.0 | 1102.2 |
| 35°    | 1103.7 | 1089.5 | 1066.6 | 1058.0 | 1050.8 |
| 37.5°  | 1053.7 | 1040.8 | 1017.9 | 1008.0 | 1000.8 |
| 40°    | 1002.4 | 990.8  | 967.9  | 955.2  | 949.5  |
| 42.5°  | 952.4  | 940.8  | 918.1  | 903.7  | 895.2  |
| 45°    | 898.1  | 888.2  | 866.6  | 851.1  | 845.2  |
| 47.5°  | 845.2  | 835.2  | 812.4  | 796.7  | 788.2  |
| 50°    | 789.5  | 782.4  | 762.4  | 742.4  | 735.2  |
| 52.5°  | 735.2  | 725.3  | 706.8  | 691.1  | 681.1  |
| 55°    | 679.7  | 671.0  | 654.0  | 636.8  | 629.7  |
| 57.5°  | 623.9  | 616.9  | 598.2  | 581.1  | 575.4  |
| 60°    | 568.2  | 562.6  | 542.6  | 526.9  | 522.6  |
| 62.5°  | 514.0  | 504.0  | 489.8  | 475.5  | 469.7  |
| 65°    | 458.4  | 449.7  | 435.5  | 422.6  | 415.6  |
| 67.5°  | 401.3  | 394.0  | 381.3  | 371.3  | 365.6  |
| 70°    | 348.4  | 342.7  | 329.8  | 319.8  | 314.2  |
| 72.5°  | 294.2  | 288.4  | 281.3  | 271.3  | 267.0  |
| 75°    | 239.8  | 237.1  | 229.8  | 221.3  | 224.2  |
| 77.5°  | 191.3  | 185.6  | 182.7  | 178.4  | 174.2  |
| 80°    | 142.8  | 141.3  | 138.4  | 134.2  | 131.4  |
| 82.5°  | 97.1   | 97.1   | 95.8   | 90.0   | 90.0   |
| 85°    | 58.5   | 57.1   | 55.7   | 51.3   | 50.0   |
| 87.5°  | 25.8   | 22.9   | 20.0   | 15.7   | 14.2   |
| 90°    | 1.6    | 19.7   | 53.5   | 50.2   | 51.8   |
| 92.5°  | 33.9   | 45.9   | 47.5   | 49.1   | 49.1   |
| 95°    | 79.7   | 94.9   | 97.7   | 97.7   | 94.9   |
| 97.5°  | 132.6  | 146.8  | 152.8  | 152.8  | 152.8  |
| 100°   | 193.8  | 206.3  | 210.6  | 210.6  | 209.0  |
| 102.5° | 258.2  | 267.4  | 273.4  | 275.0  | 273.4  |
| 105°   | 328.6  | 332.9  | 336.2  | 339.0  | 339.0  |
| 107.5° | 398.4  | 405.0  | 405.0  | 406.0  | 398.4  |
| 110°   | 466.1  | 474.8  | 474.8  | 474.8  | 470.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 539.2  | 548.5  | 546.8  | 542.4  | 539.2  |
| 115°   | 611.2  | 620.0  | 617.2  | 615.6  | 611.2  |
| 117.5° | 682.8  | 694.8  | 687.1  | 682.8  | 678.4  |
| 120°   | 754.8  | 766.8  | 754.8  | 754.8  | 749.8  |
| 122.5° | 820.2  | 835.5  | 827.9  | 823.6  | 820.2  |
| 125°   | 889.0  | 902.7  | 898.3  | 893.4  | 891.8  |
| 127.5° | 956.2  | 973.1  | 967.1  | 960.6  | 956.2  |
| 130°   | 1019.0 | 1038.6 | 1035.9 | 1032.6 | 1026.6 |
| 132.5° | 1089.4 | 1104.6 | 1105.7 | 1098.1 | 1093.7 |
| 135°   | 1150.0 | 1166.8 | 1170.1 | 1168.5 | 1164.1 |
| 137.5° | 1217.6 | 1231.2 | 1234.0 | 1232.9 | 1226.4 |
| 140°   | 1277.1 | 1290.8 | 1298.4 | 1298.4 | 1292.4 |
| 142.5° | 1338.2 | 1351.8 | 1356.2 | 1357.8 | 1351.8 |
| 145°   | 1396.1 | 1407.0 | 1415.7 | 1417.4 | 1411.3 |
| 147.5° | 1447.9 | 1461.5 | 1468.1 | 1470.8 | 1464.8 |
| 150°   | 1501.4 | 1510.7 | 1516.7 | 1521.5 | 1516.7 |
| 152.5° | 1548.8 | 1558.2 | 1565.8 | 1571.8 | 1565.8 |
| 155°   | 1596.3 | 1600.7 | 1605.6 | 1613.3 | 1608.3 |
| 157.5° | 1637.3 | 1640.6 | 1643.3 | 1654.2 | 1646.6 |
| 160°   | 1673.9 | 1677.1 | 1678.8 | 1688.0 | 1681.5 |
| 162.5° | 1707.7 | 1707.7 | 1709.3 | 1719.7 | 1712.0 |
| 165°   | 1736.6 | 1734.9 | 1734.9 | 1745.9 | 1738.3 |
| 167.5° | 1762.8 | 1757.9 | 1757.9 | 1768.8 | 1761.2 |
| 170°   | 1782.5 | 1778.1 | 1776.4 | 1787.3 | 1778.1 |
| 172.5° | 1796.1 | 1791.7 | 1790.1 | 1801.0 | 1791.7 |
| 175°   | 1807.0 | 1802.7 | 1799.3 | 1810.3 | 1801.0 |
| 177.5° | 1813.0 | 1808.7 | 1805.3 | 1814.6 | 1805.3 |
| 180°   | 1810.3 | 1810.3 | 1810.3 | 1810.3 | 1810.3 |

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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 | 10.56            | 11.36 | 11.58 | 12.39 | 13.76 | 10.12          | 10.92 | 11.13 | 11.94 | 13.31 |
|                 | 3H   | 12.20            | 12.91 | 13.22 | 13.95 | 15.34 | 11.71          | 12.42 | 12.73 | 13.46 | 14.85 |
|                 | 4H   | 12.77            | 13.45 | 13.81 | 14.48 | 15.88 | 12.27          | 12.95 | 13.31 | 13.99 | 15.39 |
|                 | 6H   | 13.15            | 13.78 | 14.20 | 14.82 | 16.23 | 12.65          | 13.28 | 13.70 | 14.32 | 15.73 |
|                 | 8H   | 13.24            | 13.84 | 14.30 | 14.90 | 16.30 | 12.74          | 13.34 | 13.80 | 14.40 | 15.80 |
|                 | 12H  | 13.28            | 13.85 | 14.34 | 14.90 | 16.33 | 12.78          | 13.34 | 13.83 | 14.39 | 15.82 |
| 4H              | 2H   | 11.00            | 11.68 | 12.05 | 12.72 | 14.12 | 10.65          | 11.33 | 11.69 | 12.36 | 13.76 |
|                 | 3H   | 12.84            | 13.41 | 13.89 | 14.47 | 15.88 | 12.43          | 13.00 | 13.49 | 14.06 | 15.48 |
|                 | 4H   | 13.54            | 14.06 | 14.60 | 15.11 | 16.55 | 13.11          | 13.63 | 14.17 | 14.69 | 16.12 |
|                 | 6H   | 14.03            | 14.48 | 15.10 | 15.56 | 16.98 | 13.60          | 14.04 | 14.67 | 15.12 | 16.55 |
|                 | 8H   | 14.17            | 14.58 | 15.24 | 15.66 | 17.10 | 13.73          | 14.15 | 14.80 | 15.22 | 16.66 |
|                 | 12H  | 14.23            | 14.61 | 15.32 | 15.69 | 17.14 | 13.78          | 14.16 | 14.87 | 15.24 | 16.69 |
| 8H              | 4H   | 13.72            | 14.13 | 14.79 | 15.21 | 16.65 | 13.34          | 13.76 | 14.41 | 14.83 | 16.27 |
|                 | 6H   | 14.32            | 14.67 | 15.41 | 15.78 | 17.22 | 13.94          | 14.28 | 15.03 | 15.39 | 16.84 |
|                 | 8H   | 14.53            | 14.83 | 15.63 | 15.93 | 17.39 | 14.13          | 14.44 | 15.23 | 15.53 | 16.99 |
|                 | 12H  | 14.64            | 14.91 | 15.75 | 16.00 | 17.50 | 14.23          | 14.50 | 15.34 | 15.59 | 17.09 |
| 12H             | 4H   | 13.70            | 14.07 | 14.78 | 15.16 | 16.61 | 13.33          | 13.70 | 14.41 | 14.79 | 16.24 |
|                 | 6H   | 14.34            | 14.65 | 15.44 | 15.74 | 17.20 | 13.97          | 14.27 | 15.07 | 15.37 | 16.83 |
|                 | 8H   | 14.57            | 14.83 | 15.67 | 15.93 | 17.43 | 14.19          | 14.45 | 15.29 | 15.55 | 17.05 |