

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: P903630

Luminaire Tested: DFN2DIP-SQ3F0-040D080US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903630  
REPORT IS A COMBINATION OF REPORTS P899934 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D080US830-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

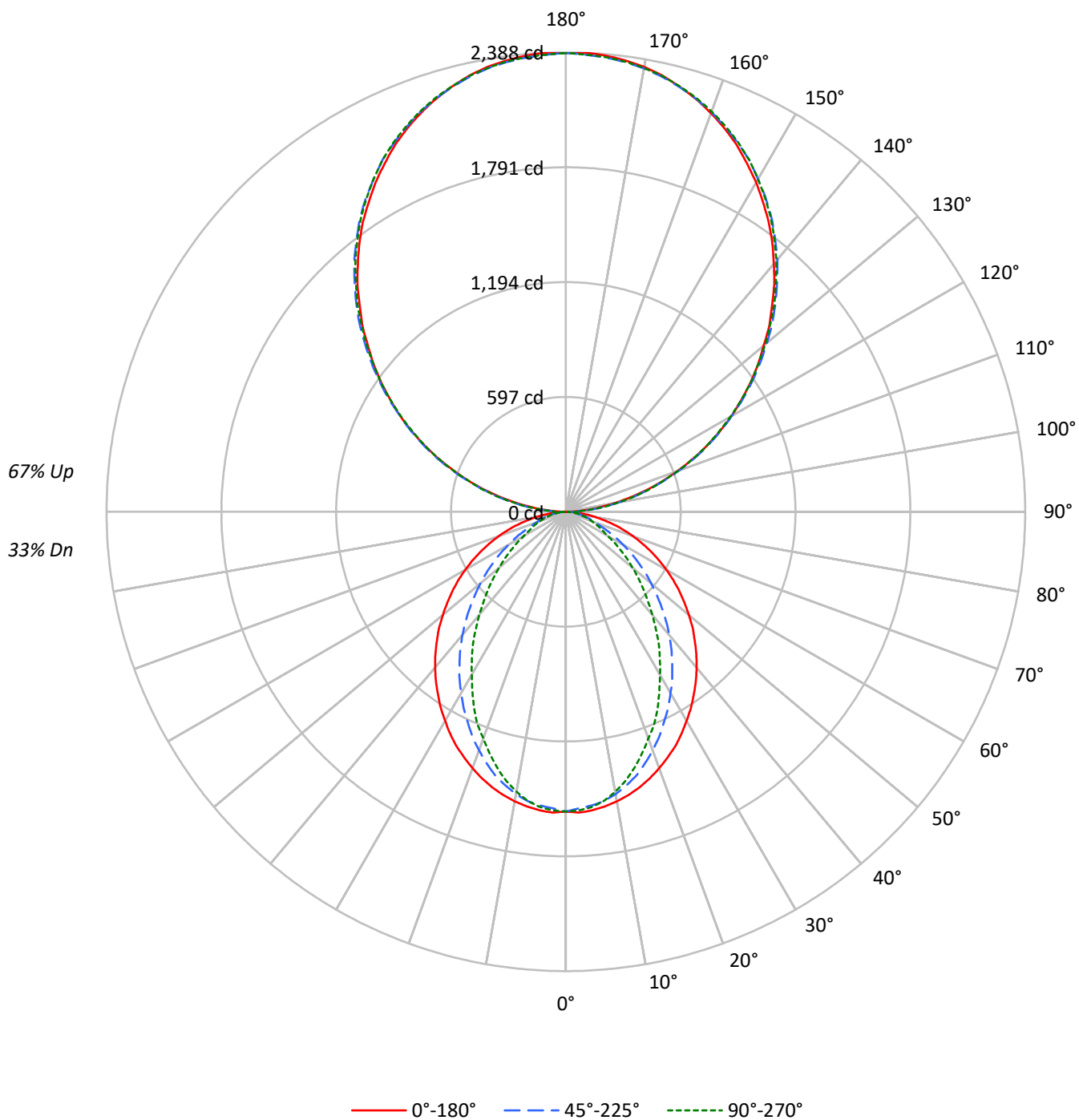
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9877.8 lumens  
Efficiency: N/A  
Efficacy: 106.6 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-Indirect  
  
Input Watts (W): 92.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ3F0-040D080US830-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P903630

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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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 |
| 8   | 52  | 40  | 33  | 28  | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1785 | 1785 | 1785 |
| 5°  | 1787 | 1756 | 1768 |
| 10° | 1768 | 1720 | 1710 |
| 15° | 1743 | 1662 | 1620 |
| 20° | 1709 | 1583 | 1511 |
| 25° | 1675 | 1494 | 1405 |
| 30° | 1630 | 1403 | 1271 |
| 35° | 1585 | 1305 | 1153 |
| 40° | 1540 | 1204 | 1018 |
| 45° | 1487 | 1092 | 896  |
| 50° | 1432 | 979  | 777  |
| 55° | 1375 | 859  | 662  |
| 60° | 1309 | 733  | 545  |
| 65° | 1233 | 605  | 489  |
| 70° | 1140 | 486  | 442  |
| 75° | 1024 | 426  | 401  |
| 80° | 855  | 354  | 346  |
| 85° | 580  | 231  | 257  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2399 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.0  | 1.5       |
| 10°-20°   | 400.9  | 4.1       |
| 20°-30°   | 562.8  | 5.7       |
| 30°-40°   | 613.5  | 6.2       |
| 40°-50°   | 563.9  | 5.7       |
| 50°-60°   | 442.9  | 4.5       |
| 60°-70°   | 288.3  | 2.9       |
| 70°-80°   | 148.4  | 1.5       |
| 80°-90°   | 44.7   | 0.5       |
| 90°-100°  | 147.6  | 1.5       |
| 100°-110° | 468.9  | 4.7       |
| 110°-120° | 802.4  | 8.1       |
| 120°-130° | 1055.3 | 10.7      |
| 130°-140° | 1184.5 | 12.0      |
| 140°-150° | 1161.5 | 11.8      |
| 150°-160° | 974.4  | 9.9       |
| 160°-170° | 646.2  | 6.5       |
| 170°-180° | 225.9  | 2.3       |
| 0°-30°    | 1109.8 | 11.2      |
| 0°-40°    | 1723.3 | 17.4      |
| 0°-60°    | 2730.1 | 27.6      |
| 0°-90°    | 3211.4 | 32.5      |
| 90°-120°  | 1418.8 | 14.4      |
| 90°-150°  | 4820.1 | 48.8      |
| 90°-180°  | 6666.0 | 67.5      |
| 0°-180°   | 9877.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1558 | 1558  | 1558 | 1558  | 1558 |      |
| 5°   | 1558 | 1551  | 1533 | 1546  | 1541 | 148  |
| 15°  | 1482 | 1466  | 1419 | 1392  | 1378 | 418  |
| 25°  | 1345 | 1300  | 1207 | 1149  | 1128 | 619  |
| 35°  | 1159 | 1087  | 963  | 874   | 843  | 726  |
| 45°  | 948  | 853   | 705  | 605   | 571  | 732  |
| 55°  | 721  | 611   | 458  | 374   | 347  | 644  |
| 65°  | 486  | 372   | 245  | 198   | 193  | 482  |
| 75°  | 259  | 161   | 113  | 103   | 102  | 274  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 2    | 26    | 70   | 66    | 68   | 10   |
| 95°  | 105  | 125   | 129  | 129   | 125  | 117  |
| 105° | 433  | 439   | 443  | 446   | 446  | 457  |
| 115° | 805  | 817   | 813  | 811   | 805  | 796  |
| 125° | 1171 | 1189  | 1183 | 1177  | 1175 | 1047 |
| 135° | 1515 | 1537  | 1541 | 1539  | 1534 | 1171 |
| 145° | 1839 | 1853  | 1865 | 1867  | 1859 | 1149 |
| 155° | 2103 | 2109  | 2115 | 2125  | 2119 | 968  |
| 165° | 2288 | 2286  | 2286 | 2300  | 2290 | 645  |
| 175° | 2380 | 2375  | 2370 | 2385  | 2372 | 226  |
| 180° | 2385 | 2385  | 2385 | 2385  | 2385 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1558.2 | 1558.2 | 1558.2 | 1558.2 | 1558.2 |
| 2.5°   | 1565.3 | 1558.2 | 1542.7 | 1556.9 | 1554.0 |
| 5°     | 1558.2 | 1551.1 | 1532.8 | 1545.5 | 1541.3 |
| 7.5°   | 1545.5 | 1537.1 | 1517.4 | 1522.9 | 1515.9 |
| 10°    | 1528.6 | 1518.7 | 1490.5 | 1486.2 | 1477.9 |
| 12.5°  | 1507.5 | 1494.8 | 1456.6 | 1448.2 | 1432.7 |
| 15°    | 1482.1 | 1466.5 | 1418.6 | 1391.9 | 1377.8 |
| 17.5°  | 1452.5 | 1429.8 | 1370.6 | 1339.6 | 1317.0 |
| 20°    | 1418.6 | 1390.3 | 1319.8 | 1284.7 | 1253.6 |
| 22.5°  | 1382.0 | 1349.5 | 1267.6 | 1219.7 | 1198.7 |
| 25°    | 1345.3 | 1300.1 | 1207.0 | 1149.3 | 1128.0 |
| 27.5°  | 1301.7 | 1253.6 | 1150.7 | 1084.4 | 1051.9 |
| 30°    | 1255.1 | 1201.4 | 1088.5 | 1016.7 | 978.6  |
| 32.5°  | 1209.9 | 1145.0 | 1029.4 | 944.8  | 909.5  |
| 35°    | 1159.2 | 1087.2 | 963.2  | 874.3  | 843.2  |
| 37.5°  | 1109.8 | 1032.2 | 901.1  | 803.7  | 768.5  |
| 40°    | 1057.6 | 973.1  | 836.2  | 736.1  | 699.5  |
| 42.5°  | 1004.0 | 913.8  | 771.4  | 666.9  | 631.8  |
| 45°    | 947.6  | 853.1  | 705.1  | 604.9  | 571.1  |
| 47.5°  | 894.1  | 794.0  | 641.7  | 541.5  | 510.5  |
| 50°    | 834.8  | 734.7  | 579.6  | 482.2  | 452.7  |
| 52.5°  | 776.9  | 671.2  | 520.4  | 427.3  | 400.5  |
| 55°    | 720.6  | 610.6  | 458.3  | 373.7  | 346.9  |
| 57.5°  | 662.8  | 550.0  | 403.3  | 324.3  | 301.8  |
| 60°    | 603.5  | 490.7  | 345.4  | 273.6  | 251.1  |
| 62.5°  | 545.8  | 433.0  | 296.1  | 228.5  | 217.3  |
| 65°    | 486.5  | 372.2  | 245.3  | 197.5  | 193.1  |
| 67.5°  | 430.2  | 315.8  | 197.5  | 173.4  | 169.2  |
| 70°    | 370.9  | 260.9  | 163.5  | 149.5  | 143.7  |
| 72.5°  | 314.5  | 210.1  | 136.8  | 125.5  | 122.7  |
| 75°    | 259.4  | 160.7  | 112.8  | 102.9  | 101.6  |
| 77.5°  | 204.5  | 114.1  | 88.9   | 83.2   | 80.3   |
| 80°    | 153.6  | 81.8   | 67.6   | 62.1   | 62.1   |
| 82.5°  | 107.2  | 55.0   | 46.6   | 43.6   | 43.6   |
| 85°    | 60.6   | 31.0   | 26.8   | 26.8   | 26.8   |
| 87.5°  | 22.6   | 11.2   | 11.2   | 9.9    | 9.9    |
| 90°    | 2.2    | 25.9   | 70.5   | 66.2   | 68.3   |
| 92.5°  | 44.6   | 60.4   | 62.6   | 64.7   | 64.7   |
| 95°    | 105.0  | 125.1  | 128.7  | 128.7  | 125.1  |
| 97.5°  | 174.7  | 193.4  | 201.3  | 201.3  | 201.3  |
| 100°   | 255.2  | 271.7  | 277.5  | 277.5  | 275.3  |
| 102.5° | 340.1  | 352.3  | 360.1  | 362.3  | 360.1  |
| 105°   | 432.8  | 438.6  | 442.9  | 446.5  | 446.5  |
| 107.5° | 524.8  | 533.5  | 533.5  | 534.9  | 524.8  |
| 110°   | 614.0  | 625.5  | 625.5  | 625.5  | 619.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 710.3  | 722.6  | 720.4  | 714.6  | 710.3  |
| 115°   | 805.2  | 816.7  | 813.1  | 811.0  | 805.2  |
| 117.5° | 899.4  | 915.2  | 905.1  | 899.4  | 893.6  |
| 120°   | 994.3  | 1010.1 | 994.3  | 994.3  | 987.8  |
| 122.5° | 1080.5 | 1100.7 | 1090.6 | 1084.9 | 1080.5 |
| 125°   | 1171.1 | 1189.1 | 1183.4 | 1176.9 | 1174.8 |
| 127.5° | 1259.6 | 1281.9 | 1273.9 | 1265.4 | 1259.6 |
| 130°   | 1342.3 | 1368.1 | 1364.5 | 1360.3 | 1352.4 |
| 132.5° | 1435.0 | 1455.1 | 1456.6 | 1446.5 | 1440.8 |
| 135°   | 1514.8 | 1537.1 | 1541.4 | 1539.3 | 1533.5 |
| 137.5° | 1603.9 | 1621.9 | 1625.5 | 1624.1 | 1615.4 |
| 140°   | 1682.3 | 1700.3 | 1710.3 | 1710.3 | 1702.4 |
| 142.5° | 1762.8 | 1780.8 | 1786.6 | 1788.8 | 1780.8 |
| 145°   | 1839.1 | 1853.4 | 1864.9 | 1867.1 | 1859.2 |
| 147.5° | 1907.3 | 1925.3 | 1933.9 | 1937.6 | 1929.7 |
| 150°   | 1977.8 | 1990.0 | 1997.9 | 2004.4 | 1997.9 |
| 152.5° | 2040.3 | 2052.6 | 2062.7 | 2070.6 | 2062.7 |
| 155°   | 2102.9 | 2108.7 | 2115.2 | 2125.2 | 2118.7 |
| 157.5° | 2156.8 | 2161.2 | 2164.7 | 2179.1 | 2169.1 |
| 160°   | 2205.0 | 2209.3 | 2211.5 | 2223.6 | 2215.1 |
| 162.5° | 2249.6 | 2249.6 | 2251.7 | 2265.4 | 2255.3 |
| 165°   | 2287.6 | 2285.5 | 2285.5 | 2299.9 | 2289.8 |
| 167.5° | 2322.1 | 2315.7 | 2315.7 | 2330.1 | 2320.0 |
| 170°   | 2348.1 | 2342.3 | 2340.1 | 2354.6 | 2342.3 |
| 172.5° | 2366.1 | 2360.3 | 2358.1 | 2372.5 | 2360.3 |
| 175°   | 2380.4 | 2374.6 | 2370.3 | 2384.7 | 2372.5 |
| 177.5° | 2388.3 | 2382.6 | 2378.2 | 2390.5 | 2378.2 |
| 180°   | 2384.7 | 2384.7 | 2384.7 | 2384.7 | 2384.7 |

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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 | 7.23             | 7.93  | 8.33  | 9.02  | 10.53 | 3.19           | 3.89 | 4.28 | 4.98 | 6.49 |
|                 | 3H   | 8.89             | 9.52  | 10.00 | 10.62 | 12.14 | 4.36           | 4.99 | 5.47 | 6.09 | 7.61 |
|                 | 4H   | 9.49             | 10.09 | 10.61 | 11.19 | 12.72 | 4.80           | 5.40 | 5.92 | 6.50 | 8.02 |
|                 | 6H   | 9.90             | 10.45 | 11.03 | 11.56 | 13.09 | 5.11           | 5.66 | 6.23 | 6.76 | 8.30 |
|                 | 8H   | 10.02            | 10.54 | 11.15 | 11.66 | 13.20 | 5.19           | 5.71 | 6.32 | 6.83 | 8.36 |
|                 | 12H  | 10.08            | 10.57 | 11.21 | 11.69 | 13.24 | 5.23           | 5.72 | 6.36 | 6.84 | 8.39 |
| 4H              | 2H   | 7.23             | 7.82  | 8.35  | 8.93  | 10.45 | 3.76           | 4.36 | 4.89 | 5.46 | 6.99 |
|                 | 3H   | 9.04             | 9.54  | 10.17 | 10.67 | 12.20 | 5.09           | 5.59 | 6.23 | 6.72 | 8.26 |
|                 | 4H   | 9.72             | 10.18 | 10.86 | 11.30 | 12.86 | 5.63           | 6.09 | 6.77 | 7.21 | 8.77 |
|                 | 6H   | 10.23            | 10.62 | 11.37 | 11.76 | 13.31 | 6.04           | 6.43 | 7.18 | 7.57 | 9.12 |
|                 | 8H   | 10.40            | 10.76 | 11.54 | 11.89 | 13.46 | 6.16           | 6.53 | 7.30 | 7.66 | 9.22 |
|                 | 12H  | 10.48            | 10.81 | 11.64 | 11.96 | 13.53 | 6.22           | 6.55 | 7.37 | 7.69 | 9.26 |
| 8H              | 4H   | 9.68             | 10.04 | 10.82 | 11.18 | 12.74 | 5.90           | 6.27 | 7.04 | 7.40 | 8.96 |
|                 | 6H   | 10.24            | 10.54 | 11.40 | 11.71 | 13.27 | 6.41           | 6.71 | 7.57 | 7.88 | 9.44 |
|                 | 8H   | 10.45            | 10.71 | 11.61 | 11.87 | 13.45 | 6.59           | 6.85 | 7.76 | 8.01 | 9.59 |
|                 | 12H  | 10.58            | 10.81 | 11.75 | 11.96 | 13.58 | 6.70           | 6.93 | 7.87 | 8.08 | 9.70 |
| 12H             | 4H   | 9.63             | 9.96  | 10.78 | 11.10 | 12.67 | 5.90           | 6.23 | 7.05 | 7.37 | 8.94 |
|                 | 6H   | 10.21            | 10.47 | 11.38 | 11.63 | 13.21 | 6.45           | 6.72 | 7.62 | 7.87 | 9.45 |
|                 | 8H   | 10.42            | 10.65 | 11.59 | 11.80 | 13.42 | 6.65           | 6.88 | 7.82 | 8.03 | 9.65 |