

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: P920774

Luminaire Tested: DFN2DIP-TR3F0-040D080US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920774  
REPORT IS A COMBINATION OF REPORTS P900343 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-040D080US935-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

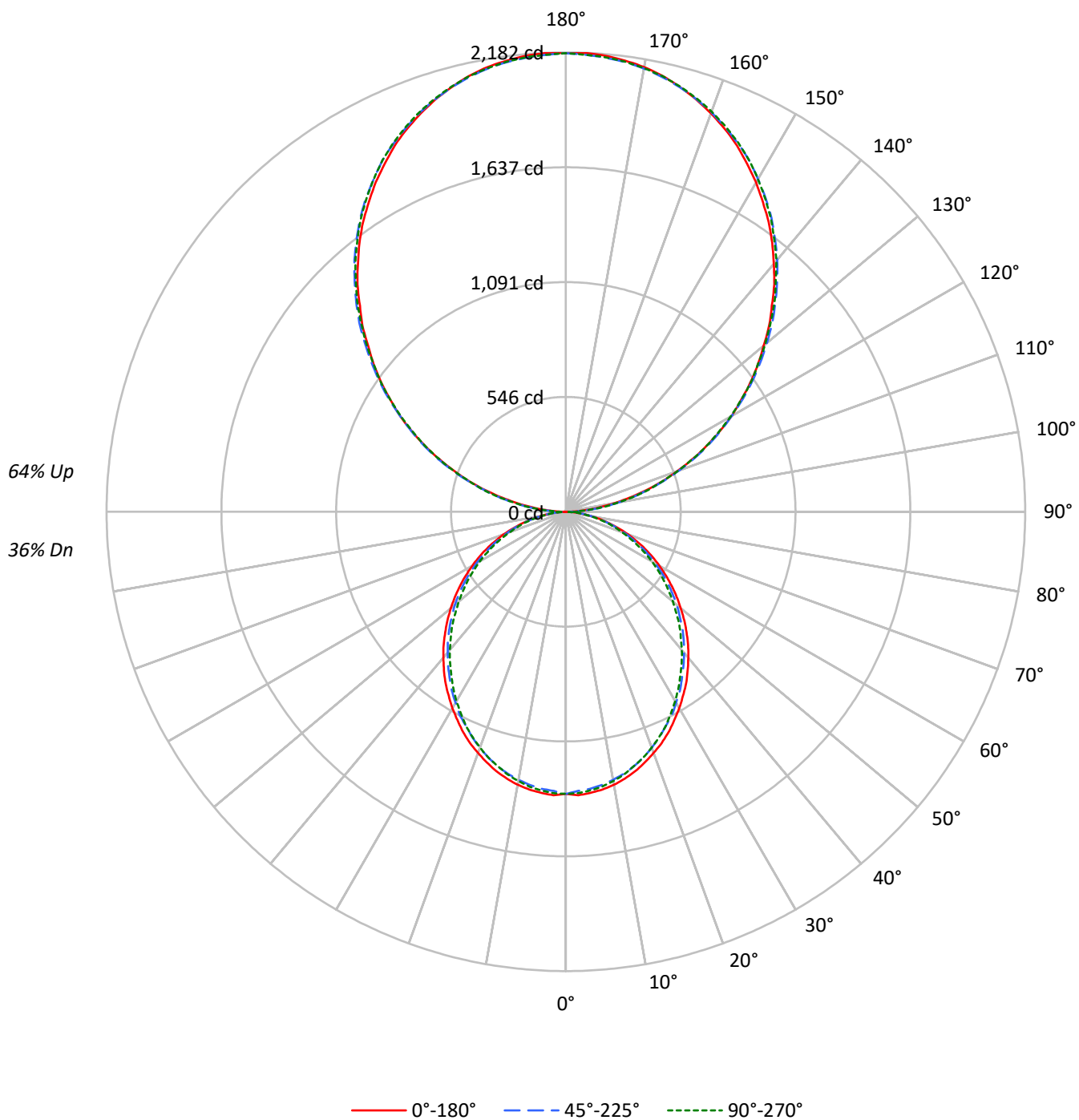
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9505.4 lumens  
Efficiency: N/A  
Efficacy: 98.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 96.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

**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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 43 | 43 | 43 |
| 1   | 95  | 90  | 87  | 83  | 85 | 82 | 79 | 76 | 66 | 64 | 62 | 52 | 50 | 49 | 38 | 37 | 36 |
| 2   | 86  | 79  | 73  | 68  | 78 | 72 | 66 | 62 | 58 | 54 | 51 | 45 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 69  | 62  | 56  | 71 | 63 | 57 | 52 | 51 | 47 | 43 | 40 | 37 | 34 | 30 | 28 | 26 |
| 4   | 72  | 61  | 54  | 48  | 65 | 56 | 49 | 44 | 45 | 40 | 37 | 36 | 32 | 29 | 27 | 24 | 22 |
| 5   | 66  | 54  | 47  | 41  | 59 | 50 | 43 | 38 | 40 | 35 | 31 | 32 | 28 | 25 | 24 | 22 | 20 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 36 | 31 | 27 | 29 | 25 | 22 | 22 | 19 | 17 |
| 7   | 56  | 44  | 36  | 31  | 50 | 40 | 33 | 28 | 33 | 28 | 24 | 26 | 22 | 20 | 20 | 17 | 15 |
| 8   | 52  | 40  | 32  | 27  | 47 | 36 | 30 | 25 | 30 | 25 | 21 | 24 | 20 | 17 | 18 | 16 | 14 |
| 9   | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 22 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 14 | 12 |
| 10  | 45  | 33  | 26  | 21  | 41 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 17 | 14 | 16 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1670 | 1670 | 1670 |
| 5°  | 1672 | 1645 | 1657 |
| 10° | 1657 | 1622 | 1633 |
| 15° | 1632 | 1594 | 1597 |
| 20° | 1598 | 1555 | 1560 |
| 25° | 1564 | 1509 | 1517 |
| 30° | 1522 | 1467 | 1464 |
| 35° | 1482 | 1416 | 1407 |
| 40° | 1434 | 1366 | 1353 |
| 45° | 1384 | 1315 | 1297 |
| 50° | 1331 | 1261 | 1233 |
| 55° | 1275 | 1200 | 1173 |
| 60° | 1212 | 1126 | 1106 |
| 65° | 1142 | 1050 | 1026 |
| 70° | 1054 | 957  | 939  |
| 75° | 932  | 846  | 857  |
| 80° | 784  | 704  | 705  |
| 85° | 554  | 464  | 455  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2127 cd/sqm

TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 126.1  | 1.3       |
| 10°-20°   | 354.9  | 3.7       |
| 20°-30°   | 521.5  | 5.5       |
| 30°-40°   | 605.7  | 6.4       |
| 40°-50°   | 605.0  | 6.4       |
| 50°-60°   | 527.5  | 5.5       |
| 60°-70°   | 389.9  | 4.1       |
| 70°-80°   | 220.6  | 2.3       |
| 80°-90°   | 64.4   | 0.7       |
| 90°-100°  | 134.8  | 1.4       |
| 100°-110° | 428.3  | 4.5       |
| 110°-120° | 733.0  | 7.7       |
| 120°-130° | 964.0  | 10.1      |
| 130°-140° | 1082.0 | 11.4      |
| 140°-150° | 1061.0 | 11.2      |
| 150°-160° | 890.1  | 9.4       |
| 160°-170° | 590.3  | 6.2       |
| 170°-180° | 206.3  | 2.2       |
| 0°-30°    | 1002.5 | 10.5      |
| 0°-40°    | 1608.3 | 16.9      |
| 0°-60°    | 2740.7 | 28.8      |
| 0°-90°    | 3415.7 | 35.9      |
| 90°-120°  | 1296.1 | 13.6      |
| 90°-150°  | 4403.1 | 46.3      |
| 90°-180°  | 6090.0 | 64.1      |
| 0°-180°   | 9505.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1340 | 1340  | 1340 | 1340  | 1340 |      |
| 5°   | 1340 | 1335  | 1321 | 1331  | 1329 | 127  |
| 15°  | 1276 | 1268  | 1251 | 1256  | 1250 | 359  |
| 25°  | 1154 | 1144  | 1122 | 1125  | 1122 | 531  |
| 35°  | 996  | 983   | 963  | 955   | 948  | 622  |
| 45°  | 810  | 802   | 782  | 768   | 763  | 626  |
| 55°  | 614  | 606   | 590  | 575   | 568  | 548  |
| 65°  | 414  | 406   | 393  | 381   | 375  | 409  |
| 75°  | 216  | 214   | 207  | 200   | 202  | 231  |
| 85°  | 53   | 52    | 50   | 46    | 45   | 59   |
| 90°  | 2    | 24    | 64   | 60    | 62   | 9    |
| 95°  | 96   | 114   | 118  | 118   | 114  | 107  |
| 105° | 395  | 401   | 405  | 408   | 408  | 417  |
| 115° | 736  | 746   | 743  | 741   | 736  | 728  |
| 125° | 1070 | 1086  | 1081 | 1075  | 1073 | 956  |
| 135° | 1384 | 1404  | 1408 | 1406  | 1401 | 1070 |
| 145° | 1680 | 1693  | 1704 | 1706  | 1698 | 1050 |
| 155° | 1921 | 1926  | 1932 | 1941  | 1935 | 884  |
| 165° | 2090 | 2088  | 2088 | 2101  | 2092 | 590  |
| 175° | 2174 | 2169  | 2165 | 2178  | 2167 | 207  |
| 180° | 2178 | 2178  | 2178 | 2178  | 2178 |      |

TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1340.1 | 1340.1 | 1340.1 | 1340.1 | 1340.1 |
| 2.5°   | 1347.9 | 1341.4 | 1327.2 | 1340.1 | 1337.6 |
| 5°     | 1340.1 | 1335.0 | 1320.8 | 1331.0 | 1328.6 |
| 7.5°   | 1331.0 | 1323.4 | 1309.1 | 1319.6 | 1317.0 |
| 10°    | 1317.0 | 1307.9 | 1292.5 | 1302.8 | 1298.9 |
| 12.5°  | 1297.5 | 1289.9 | 1274.4 | 1280.9 | 1278.2 |
| 15°    | 1275.7 | 1268.0 | 1251.2 | 1256.4 | 1250.0 |
| 17.5°  | 1248.6 | 1241.0 | 1224.2 | 1230.5 | 1224.2 |
| 20°    | 1218.9 | 1211.3 | 1193.3 | 1197.0 | 1192.1 |
| 22.5°  | 1189.4 | 1177.8 | 1161.0 | 1161.0 | 1158.4 |
| 25°    | 1154.5 | 1144.3 | 1122.4 | 1124.9 | 1122.4 |
| 27.5°  | 1115.9 | 1106.8 | 1090.2 | 1086.3 | 1079.9 |
| 30°    | 1077.3 | 1066.9 | 1047.7 | 1043.8 | 1038.6 |
| 32.5°  | 1036.0 | 1028.4 | 1007.7 | 1000.0 | 994.7  |
| 35°    | 996.1  | 983.3  | 962.6  | 954.8  | 948.4  |
| 37.5°  | 951.0  | 939.3  | 918.7  | 909.7  | 903.3  |
| 40°    | 904.7  | 894.2  | 873.6  | 862.1  | 857.0  |
| 42.5°  | 859.5  | 849.1  | 828.6  | 815.6  | 808.0  |
| 45°    | 810.5  | 801.6  | 782.1  | 768.1  | 762.8  |
| 47.5°  | 762.8  | 753.8  | 733.2  | 719.0  | 711.4  |
| 50°    | 712.6  | 706.1  | 688.1  | 670.0  | 663.6  |
| 52.5°  | 663.6  | 654.6  | 637.9  | 623.7  | 614.7  |
| 55°    | 613.5  | 605.6  | 590.2  | 574.7  | 568.3  |
| 57.5°  | 563.1  | 556.7  | 539.8  | 524.4  | 519.3  |
| 60°    | 512.8  | 507.7  | 489.7  | 475.5  | 471.7  |
| 62.5°  | 463.9  | 454.9  | 442.0  | 429.1  | 424.0  |
| 65°    | 413.7  | 405.9  | 393.0  | 381.4  | 375.1  |
| 67.5°  | 362.1  | 355.6  | 344.1  | 335.1  | 329.9  |
| 70°    | 314.4  | 309.3  | 297.6  | 288.6  | 283.5  |
| 72.5°  | 265.5  | 260.3  | 253.9  | 244.9  | 241.0  |
| 75°    | 216.5  | 214.0  | 207.4  | 199.8  | 202.3  |
| 77.5°  | 172.6  | 167.5  | 164.9  | 161.0  | 157.2  |
| 80°    | 128.9  | 127.5  | 124.9  | 121.1  | 118.6  |
| 82.5°  | 87.6   | 87.6   | 86.4   | 81.2   | 81.2   |
| 85°    | 52.8   | 51.6   | 50.3   | 46.3   | 45.1   |
| 87.5°  | 23.2   | 20.7   | 18.1   | 14.2   | 12.8   |
| 90°    | 2.0    | 23.7   | 64.4   | 60.4   | 62.4   |
| 92.5°  | 40.7   | 55.2   | 57.2   | 59.1   | 59.1   |
| 95°    | 95.9   | 114.3  | 117.5  | 117.5  | 114.3  |
| 97.5°  | 159.6  | 176.7  | 183.9  | 183.9  | 183.9  |
| 100°   | 233.2  | 248.2  | 253.5  | 253.5  | 251.5  |
| 102.5° | 310.6  | 321.8  | 329.0  | 331.0  | 329.0  |
| 105°   | 395.4  | 400.6  | 404.6  | 407.9  | 407.9  |
| 107.5° | 479.4  | 487.3  | 487.3  | 488.6  | 479.4  |
| 110°   | 560.9  | 571.4  | 571.4  | 571.4  | 566.1  |

TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 648.8  | 660.0  | 658.1  | 652.8  | 648.8  |
| 115°   | 735.6  | 746.1  | 742.8  | 740.8  | 735.6  |
| 117.5° | 821.6  | 836.0  | 826.8  | 821.6  | 816.3  |
| 120°   | 908.3  | 922.7  | 908.3  | 908.3  | 902.3  |
| 122.5° | 987.0  | 1005.5 | 996.3  | 991.0  | 987.0  |
| 125°   | 1069.8 | 1086.2 | 1081.0 | 1075.0 | 1073.1 |
| 127.5° | 1150.6 | 1171.0 | 1163.7 | 1155.9 | 1150.6 |
| 130°   | 1226.1 | 1249.7 | 1246.5 | 1242.6 | 1235.4 |
| 132.5° | 1310.9 | 1329.2 | 1330.6 | 1321.4 | 1316.1 |
| 135°   | 1383.7 | 1404.1 | 1408.1 | 1406.1 | 1400.8 |
| 137.5° | 1465.2 | 1481.6 | 1484.9 | 1483.6 | 1475.7 |
| 140°   | 1536.8 | 1553.2 | 1562.4 | 1562.4 | 1555.1 |
| 142.5° | 1610.3 | 1626.8 | 1632.0 | 1634.0 | 1626.8 |
| 145°   | 1680.0 | 1693.1 | 1703.6 | 1705.6 | 1698.3 |
| 147.5° | 1742.3 | 1758.8 | 1766.6 | 1770.0 | 1762.7 |
| 150°   | 1806.7 | 1817.8 | 1825.1 | 1831.0 | 1825.1 |
| 152.5° | 1863.8 | 1875.0 | 1884.2 | 1891.4 | 1884.2 |
| 155°   | 1921.0 | 1926.2 | 1932.2 | 1941.3 | 1935.4 |
| 157.5° | 1970.2 | 1974.2 | 1977.5 | 1990.5 | 1981.4 |
| 160°   | 2014.2 | 2018.2 | 2020.2 | 2031.3 | 2023.4 |
| 162.5° | 2054.9 | 2054.9 | 2056.9 | 2069.4 | 2060.2 |
| 165°   | 2089.7 | 2087.7 | 2087.7 | 2100.9 | 2091.7 |
| 167.5° | 2121.2 | 2115.4 | 2115.4 | 2128.5 | 2119.3 |
| 170°   | 2144.9 | 2139.7 | 2137.7 | 2150.9 | 2139.7 |
| 172.5° | 2161.4 | 2156.1 | 2154.1 | 2167.2 | 2156.1 |
| 175°   | 2174.5 | 2169.2 | 2165.2 | 2178.4 | 2167.2 |
| 177.5° | 2181.7 | 2176.4 | 2172.5 | 2183.7 | 2172.5 |
| 180°   | 2178.4 | 2178.4 | 2178.4 | 2178.4 | 2178.4 |

TEST NUMBER: P920774

CATALOG NUMBER: DFN2DIP-TR3F0-040D080US935-FLLFLL

**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 | 7.54             | 8.29  | 8.61  | 9.36  | 10.81 | 7.11           | 7.86  | 8.18  | 8.93  | 10.39 |
|                 | 3H   | 9.18             | 9.85  | 10.26 | 10.93 | 12.41 | 8.71           | 9.38  | 9.79  | 10.46 | 11.94 |
|                 | 4H   | 9.76             | 10.39 | 10.85 | 11.47 | 12.96 | 9.29           | 9.92  | 10.38 | 11.00 | 12.49 |
|                 | 6H   | 10.14            | 10.73 | 11.24 | 11.81 | 13.31 | 9.67           | 10.26 | 10.77 | 11.34 | 12.84 |
|                 | 8H   | 10.24            | 10.80 | 11.34 | 11.90 | 13.39 | 9.77           | 10.33 | 10.87 | 11.43 | 12.92 |
|                 | 12H  | 10.28            | 10.81 | 11.39 | 11.90 | 13.42 | 9.81           | 10.34 | 10.91 | 11.43 | 12.94 |
| 4H              | 2H   | 7.98             | 8.62  | 9.08  | 9.70  | 11.18 | 7.64           | 8.27  | 8.74  | 9.36  | 10.84 |
|                 | 3H   | 9.83             | 10.36 | 10.93 | 11.46 | 12.96 | 9.44           | 9.97  | 10.54 | 11.08 | 12.57 |
|                 | 4H   | 10.53            | 11.02 | 11.64 | 12.11 | 13.63 | 10.13          | 10.61 | 11.24 | 11.71 | 13.23 |
|                 | 6H   | 11.03            | 11.45 | 12.14 | 12.57 | 14.08 | 10.62          | 11.04 | 11.74 | 12.16 | 13.67 |
|                 | 8H   | 11.17            | 11.56 | 12.29 | 12.67 | 14.20 | 10.76          | 11.15 | 11.88 | 12.27 | 13.79 |
|                 | 12H  | 11.23            | 11.59 | 12.37 | 12.71 | 14.24 | 10.82          | 11.17 | 11.95 | 12.30 | 13.83 |
| 8H              | 4H   | 10.71            | 11.10 | 11.83 | 12.22 | 13.74 | 10.36          | 10.75 | 11.47 | 11.86 | 13.38 |
|                 | 6H   | 11.33            | 11.65 | 12.46 | 12.80 | 14.33 | 10.97          | 11.29 | 12.11 | 12.45 | 13.97 |
|                 | 8H   | 11.54            | 11.82 | 12.68 | 12.96 | 14.50 | 11.18          | 11.46 | 12.32 | 12.59 | 14.14 |
|                 | 12H  | 11.66            | 11.91 | 12.81 | 13.04 | 14.62 | 11.28          | 11.53 | 12.43 | 12.66 | 14.24 |
| 12H             | 4H   | 10.69            | 11.04 | 11.82 | 12.17 | 13.70 | 10.34          | 10.70 | 11.47 | 11.82 | 13.35 |
|                 | 6H   | 11.35            | 11.64 | 12.50 | 12.77 | 14.31 | 11.01          | 11.29 | 12.15 | 12.42 | 13.97 |
|                 | 8H   | 11.58            | 11.83 | 12.73 | 12.96 | 14.54 | 11.23          | 11.48 | 12.38 | 12.61 | 14.19 |