

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: P914544

Luminaire Tested: DFN2DIP-SQ3F0-040D090US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914544  
REPORT IS A COMBINATION OF REPORTS P899951 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D090US927-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

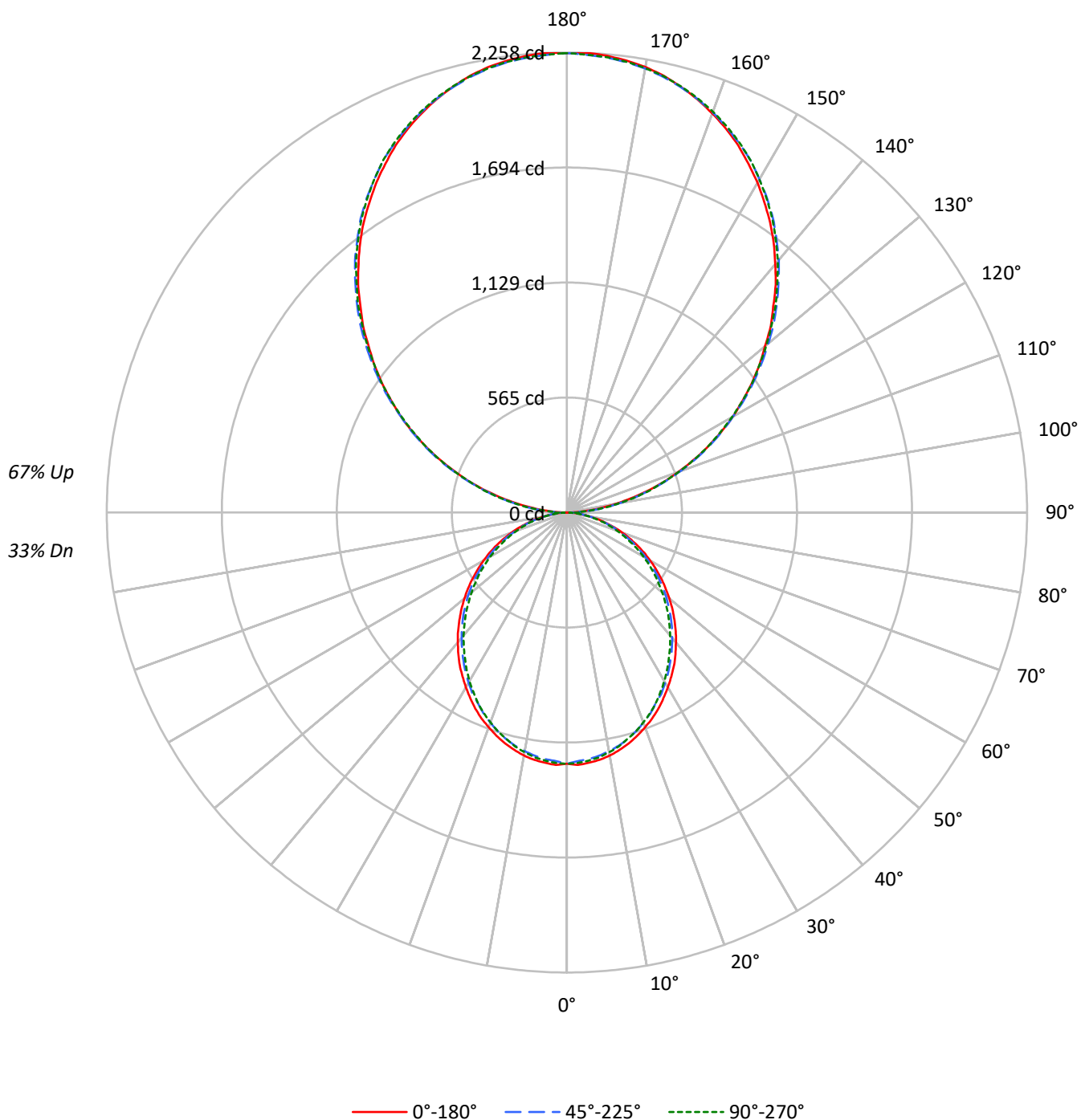
Lumens per Lamp: N/A  
Luminaire Lumens: 9446.8 lumens  
Efficiency: N/A  
Efficacy: 93.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 100.8  
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

TEST NUMBER: P914544

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US927-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P914544

CATALOG NUMBER: DFN2DIP-SQ3F0-040D090US927-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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 57 | 57 | 57 | 41 | 41 | 41 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 78  | 72  | 67  | 77 | 71 | 66 | 62 | 57 | 53 | 50 | 44 | 41 | 39 | 32 | 30 | 29 |
| 3   | 78  | 69  | 62  | 56  | 70 | 62 | 56 | 51 | 50 | 46 | 42 | 39 | 36 | 33 | 28 | 26 | 25 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 49 | 43 | 44 | 40 | 36 | 34 | 31 | 28 | 25 | 23 | 21 |
| 5   | 65  | 54  | 46  | 40  | 59 | 49 | 42 | 37 | 40 | 35 | 31 | 31 | 27 | 25 | 23 | 20 | 18 |
| 6   | 60  | 48  | 41  | 35  | 54 | 44 | 37 | 32 | 36 | 31 | 27 | 28 | 24 | 21 | 20 | 18 | 16 |
| 7   | 56  | 44  | 36  | 30  | 50 | 40 | 33 | 28 | 32 | 27 | 23 | 25 | 22 | 19 | 19 | 16 | 14 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 23 | 19 | 17 | 17 | 15 | 13 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 27 | 22 | 18 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 19 | 16 | 14 | 15 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1413 | 1413 | 1413 |
| 5°  | 1414 | 1392 | 1402 |
| 10° | 1402 | 1372 | 1383 |
| 15° | 1380 | 1349 | 1352 |
| 20° | 1351 | 1317 | 1322 |
| 25° | 1323 | 1278 | 1286 |
| 30° | 1287 | 1242 | 1241 |
| 35° | 1253 | 1200 | 1193 |
| 40° | 1212 | 1157 | 1148 |
| 45° | 1170 | 1115 | 1101 |
| 50° | 1125 | 1070 | 1048 |
| 55° | 1077 | 1018 | 998  |
| 60° | 1023 | 956  | 941  |
| 65° | 964  | 892  | 874  |
| 70° | 889  | 814  | 802  |
| 75° | 786  | 721  | 735  |
| 80° | 660  | 601  | 607  |
| 85° | 465  | 399  | 397  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2269 cd/sqm

TEST NUMBER: P914544

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.0  | 1.2       |
| 10°-20°   | 326.5  | 3.5       |
| 20°-30°   | 479.8  | 5.1       |
| 30°-40°   | 557.3  | 5.9       |
| 40°-50°   | 556.6  | 5.9       |
| 50°-60°   | 485.3  | 5.1       |
| 60°-70°   | 358.8  | 3.8       |
| 70°-80°   | 203.0  | 2.1       |
| 80°-90°   | 60.0   | 0.6       |
| 90°-100°  | 139.5  | 1.5       |
| 100°-110° | 443.3  | 4.7       |
| 110°-120° | 758.7  | 8.0       |
| 120°-130° | 997.8  | 10.6      |
| 130°-140° | 1120.0 | 11.9      |
| 140°-150° | 1098.2 | 11.6      |
| 150°-160° | 921.3  | 9.8       |
| 160°-170° | 611.0  | 6.5       |
| 170°-180° | 213.5  | 2.3       |
| 0°-30°    | 922.4  | 9.8       |
| 0°-40°    | 1479.7 | 15.7      |
| 0°-60°    | 2521.7 | 26.7      |
| 0°-90°    | 3143.4 | 33.3      |
| 90°-120°  | 1341.5 | 14.2      |
| 90°-150°  | 4557.5 | 48.2      |
| 90°-180°  | 6303.0 | 66.7      |
| 0°-180°   | 9446.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1233 | 1233  | 1233 | 1233  | 1233 |      |
| 5°   | 1233 | 1228  | 1215 | 1225  | 1222 | 117  |
| 15°  | 1174 | 1167  | 1151 | 1156  | 1150 | 331  |
| 25°  | 1062 | 1053  | 1033 | 1035  | 1033 | 489  |
| 35°  | 916  | 905   | 886  | 878   | 873  | 572  |
| 45°  | 746  | 738   | 720  | 707   | 702  | 576  |
| 55°  | 564  | 557   | 543  | 529   | 523  | 505  |
| 65°  | 381  | 373   | 362  | 351   | 345  | 376  |
| 75°  | 199  | 197   | 191  | 184   | 186  | 213  |
| 85°  | 49   | 48    | 46   | 43    | 42   | 54   |
| 90°  | 2    | 24    | 67   | 62    | 65   | 9    |
| 95°  | 99   | 118   | 122  | 122   | 118  | 110  |
| 105° | 409  | 415   | 419  | 422   | 422  | 432  |
| 115° | 761  | 772   | 769  | 767   | 761  | 753  |
| 125° | 1107 | 1124  | 1119 | 1113  | 1111 | 990  |
| 135° | 1432 | 1453  | 1458 | 1455  | 1450 | 1107 |
| 145° | 1739 | 1752  | 1763 | 1765  | 1758 | 1086 |
| 155° | 1988 | 1994  | 2000 | 2009  | 2003 | 915  |
| 165° | 2163 | 2161  | 2161 | 2175  | 2165 | 610  |
| 175° | 2251 | 2245  | 2241 | 2255  | 2243 | 214  |
| 180° | 2255 | 2255  | 2255 | 2255  | 2255 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1233.0 | 1233.0 | 1233.0 | 1233.0 | 1233.0 |
| 2.5°   | 1240.2 | 1234.2 | 1221.1 | 1233.0 | 1230.7 |
| 5°     | 1233.0 | 1228.3 | 1215.2 | 1224.6 | 1222.4 |
| 7.5°   | 1224.6 | 1217.6 | 1204.5 | 1214.1 | 1211.7 |
| 10°    | 1211.7 | 1203.4 | 1189.2 | 1198.6 | 1195.1 |
| 12.5°  | 1193.8 | 1186.8 | 1172.6 | 1178.5 | 1176.1 |
| 15°    | 1173.7 | 1166.6 | 1151.2 | 1156.0 | 1150.1 |
| 17.5°  | 1148.8 | 1141.8 | 1126.3 | 1132.2 | 1126.3 |
| 20°    | 1121.5 | 1114.4 | 1097.9 | 1101.4 | 1096.8 |
| 22.5°  | 1094.3 | 1083.6 | 1068.2 | 1068.2 | 1065.8 |
| 25°    | 1062.2 | 1052.8 | 1032.7 | 1035.0 | 1032.7 |
| 27.5°  | 1026.7 | 1018.3 | 1003.1 | 999.5  | 993.6  |
| 30°    | 991.2  | 981.7  | 963.9  | 960.4  | 955.6  |
| 32.5°  | 953.2  | 946.2  | 927.2  | 920.0  | 915.2  |
| 35°    | 916.5  | 904.7  | 885.7  | 878.5  | 872.6  |
| 37.5°  | 875.0  | 864.3  | 845.3  | 837.0  | 831.1  |
| 40°    | 832.3  | 822.8  | 803.7  | 793.2  | 788.5  |
| 42.5°  | 790.8  | 781.2  | 762.4  | 750.4  | 743.4  |
| 45°    | 745.8  | 737.5  | 719.6  | 706.7  | 701.9  |
| 47.5°  | 701.9  | 693.6  | 674.6  | 661.6  | 654.5  |
| 50°    | 655.6  | 649.7  | 633.1  | 616.5  | 610.5  |
| 52.5°  | 610.5  | 602.3  | 586.9  | 573.9  | 565.5  |
| 55°    | 564.4  | 557.2  | 543.0  | 528.8  | 522.9  |
| 57.5°  | 518.1  | 512.2  | 496.7  | 482.5  | 477.8  |
| 60°    | 471.8  | 467.1  | 450.6  | 437.5  | 434.0  |
| 62.5°  | 426.8  | 418.5  | 406.7  | 394.8  | 390.1  |
| 65°    | 380.6  | 373.4  | 361.6  | 350.9  | 345.1  |
| 67.5°  | 333.2  | 327.2  | 316.6  | 308.3  | 303.6  |
| 70°    | 289.3  | 284.6  | 273.9  | 265.5  | 260.9  |
| 72.5°  | 244.3  | 239.5  | 233.6  | 225.3  | 221.7  |
| 75°    | 199.2  | 196.9  | 190.8  | 183.8  | 186.2  |
| 77.5°  | 158.8  | 154.1  | 151.7  | 148.1  | 144.7  |
| 80°    | 118.6  | 117.3  | 114.9  | 111.5  | 109.1  |
| 82.5°  | 80.6   | 80.6   | 79.5   | 74.7   | 74.7   |
| 85°    | 48.6   | 47.5   | 46.3   | 42.6   | 41.5   |
| 87.5°  | 21.4   | 19.0   | 16.6   | 13.1   | 11.8   |
| 90°    | 2.1    | 24.5   | 66.6   | 62.5   | 64.6   |
| 92.5°  | 42.1   | 57.1   | 59.2   | 61.2   | 61.2   |
| 95°    | 99.3   | 118.3  | 121.7  | 121.7  | 118.3  |
| 97.5°  | 165.2  | 182.8  | 190.4  | 190.4  | 190.4  |
| 100°   | 241.3  | 257.0  | 262.4  | 262.4  | 260.4  |
| 102.5° | 321.5  | 333.1  | 340.6  | 342.6  | 340.6  |
| 105°   | 409.2  | 414.6  | 418.7  | 422.2  | 422.2  |
| 107.5° | 496.2  | 504.4  | 504.4  | 505.7  | 496.2  |
| 110°   | 580.5  | 591.4  | 591.4  | 591.4  | 586.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 671.6  | 683.2  | 681.1  | 675.7  | 671.6  |
| 115°   | 761.4  | 772.2  | 768.8  | 766.8  | 761.4  |
| 117.5° | 850.4  | 865.4  | 855.9  | 850.4  | 844.9  |
| 120°   | 940.2  | 955.1  | 940.2  | 940.2  | 934.0  |
| 122.5° | 1021.7 | 1040.8 | 1031.3 | 1025.8 | 1021.7 |
| 125°   | 1107.4 | 1124.3 | 1119.0 | 1112.8 | 1110.8 |
| 127.5° | 1191.0 | 1212.0 | 1204.6 | 1196.4 | 1191.0 |
| 130°   | 1269.2 | 1293.6 | 1290.2 | 1286.1 | 1278.7 |
| 132.5° | 1356.8 | 1375.9 | 1377.2 | 1367.7 | 1362.3 |
| 135°   | 1432.3 | 1453.3 | 1457.5 | 1455.4 | 1450.0 |
| 137.5° | 1516.6 | 1533.6 | 1537.0 | 1535.6 | 1527.5 |
| 140°   | 1590.7 | 1607.7 | 1617.2 | 1617.2 | 1609.7 |
| 142.5° | 1666.8 | 1683.8 | 1689.2 | 1691.3 | 1683.8 |
| 145°   | 1738.9 | 1752.5 | 1763.3 | 1765.4 | 1757.9 |
| 147.5° | 1803.5 | 1820.4 | 1828.6 | 1832.0 | 1824.6 |
| 150°   | 1870.1 | 1881.7 | 1889.1 | 1895.2 | 1889.1 |
| 152.5° | 1929.2 | 1940.8 | 1950.3 | 1957.8 | 1950.3 |
| 155°   | 1988.4 | 1993.8 | 1999.9 | 2009.4 | 2003.3 |
| 157.5° | 2039.3 | 2043.4 | 2046.8 | 2060.4 | 2050.9 |
| 160°   | 2084.9 | 2089.0 | 2091.0 | 2102.5 | 2094.4 |
| 162.5° | 2127.0 | 2127.0 | 2129.1 | 2142.0 | 2132.5 |
| 165°   | 2163.1 | 2161.0 | 2161.0 | 2174.6 | 2165.1 |
| 167.5° | 2195.7 | 2189.6 | 2189.6 | 2203.1 | 2193.6 |
| 170°   | 2220.2 | 2214.7 | 2212.7 | 2226.3 | 2214.7 |
| 172.5° | 2237.1 | 2231.7 | 2229.7 | 2243.3 | 2231.7 |
| 175°   | 2250.7 | 2245.3 | 2241.2 | 2254.9 | 2243.3 |
| 177.5° | 2258.2 | 2252.8 | 2248.7 | 2260.3 | 2248.7 |
| 180°   | 2254.9 | 2254.9 | 2254.9 | 2254.9 | 2254.9 |

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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 | 6.65             | 7.38  | 7.74  | 8.47  | 9.96  | 6.21           | 6.93  | 7.29  | 8.02  | 9.51  |
|                 | 3H   | 8.30             | 8.95  | 9.39  | 10.04 | 11.55 | 7.81           | 8.46  | 8.90  | 9.55  | 11.06 |
|                 | 4H   | 8.87             | 9.49  | 9.98  | 10.59 | 12.11 | 8.38           | 9.00  | 9.49  | 10.10 | 11.61 |
|                 | 6H   | 9.26             | 9.83  | 10.38 | 10.93 | 12.46 | 8.76           | 9.33  | 9.88  | 10.43 | 11.96 |
|                 | 8H   | 9.36             | 9.91  | 10.48 | 11.02 | 12.54 | 8.86           | 9.40  | 9.98  | 10.52 | 12.04 |
|                 | 12H  | 9.40             | 9.92  | 10.53 | 11.03 | 12.57 | 8.90           | 9.41  | 10.02 | 10.52 | 12.06 |
| 4H              | 2H   | 7.09             | 7.71  | 8.21  | 8.81  | 10.32 | 6.74           | 7.36  | 7.85  | 8.45  | 9.97  |
|                 | 3H   | 8.94             | 9.46  | 10.06 | 10.58 | 12.11 | 8.53           | 9.05  | 9.65  | 10.17 | 11.70 |
|                 | 4H   | 9.64             | 10.12 | 10.77 | 11.23 | 12.78 | 9.22           | 9.70  | 10.35 | 10.81 | 12.36 |
|                 | 6H   | 10.15            | 10.55 | 11.28 | 11.69 | 13.23 | 9.72           | 10.12 | 10.85 | 11.26 | 12.80 |
|                 | 8H   | 10.29            | 10.67 | 11.42 | 11.80 | 13.36 | 9.85           | 10.23 | 10.99 | 11.36 | 12.92 |
|                 | 12H  | 10.36            | 10.70 | 11.50 | 11.84 | 13.40 | 9.91           | 10.25 | 11.06 | 11.39 | 12.95 |
| 8H              | 4H   | 9.83             | 10.21 | 10.96 | 11.33 | 12.89 | 9.45           | 9.83  | 10.58 | 10.96 | 12.51 |
|                 | 6H   | 10.45            | 10.76 | 11.60 | 11.93 | 13.48 | 10.06          | 10.38 | 11.21 | 11.55 | 13.10 |
|                 | 8H   | 10.66            | 10.94 | 11.82 | 12.09 | 13.66 | 10.27          | 10.54 | 11.43 | 11.69 | 13.27 |
|                 | 12H  | 10.78            | 11.02 | 11.95 | 12.17 | 13.78 | 10.37          | 10.61 | 11.54 | 11.76 | 13.37 |
| 12H             | 4H   | 9.80             | 10.15 | 10.95 | 11.29 | 12.85 | 9.44           | 9.78  | 10.58 | 10.92 | 12.48 |
|                 | 6H   | 10.47            | 10.75 | 11.63 | 11.90 | 13.47 | 10.10          | 10.37 | 11.26 | 11.52 | 13.10 |
|                 | 8H   | 10.70            | 10.95 | 11.87 | 12.09 | 13.70 | 10.32          | 10.56 | 11.49 | 11.71 | 13.32 |