

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: P918261

Luminaire Tested: DFN2DIP-TR4F0-060D050US930-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918261  
REPORT IS A COMBINATION OF REPORTS P901912 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-060D050US930-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

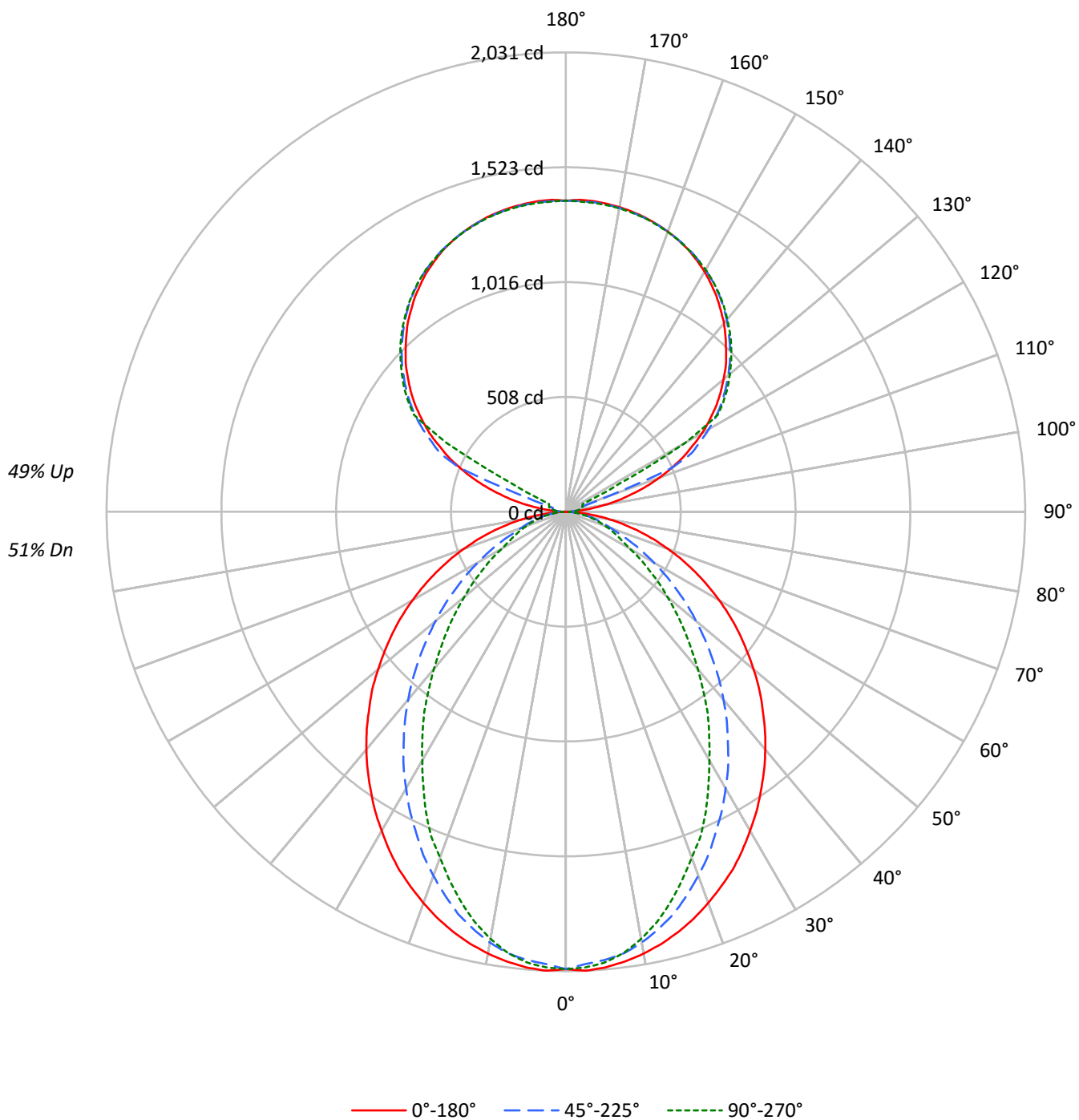
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8193.7 lumens  
Efficiency: N/A  
Efficacy: 89.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 91.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 57 | 57 | 57 |
| 1   | 98  | 94  | 91  | 87  | 91 | 87 | 84 | 81 | 74 | 72 | 70 | 62 | 61 | 59 | 51 | 50 | 49 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 67 | 66 | 62 | 59 | 55 | 52 | 50 | 45 | 44 | 42 |
| 3   | 82  | 73  | 66  | 61  | 76 | 68 | 62 | 57 | 58 | 54 | 50 | 49 | 46 | 43 | 41 | 38 | 36 |
| 4   | 76  | 65  | 58  | 52  | 70 | 61 | 54 | 49 | 52 | 47 | 43 | 44 | 40 | 37 | 37 | 34 | 32 |
| 5   | 70  | 58  | 50  | 45  | 64 | 54 | 47 | 42 | 47 | 41 | 37 | 40 | 36 | 33 | 33 | 30 | 28 |
| 6   | 64  | 53  | 45  | 39  | 59 | 49 | 42 | 37 | 42 | 37 | 33 | 36 | 32 | 29 | 30 | 27 | 25 |
| 7   | 60  | 48  | 40  | 34  | 55 | 45 | 38 | 33 | 39 | 33 | 29 | 33 | 29 | 26 | 28 | 25 | 22 |
| 8   | 55  | 43  | 36  | 31  | 51 | 41 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 26 | 23 | 20 |
| 9   | 52  | 40  | 32  | 27  | 48 | 37 | 31 | 26 | 32 | 27 | 23 | 28 | 24 | 21 | 24 | 21 | 18 |
| 10  | 48  | 36  | 29  | 25  | 45 | 34 | 28 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1606 | 1606 | 1606 |
| 5°  | 1609 | 1581 | 1591 |
| 10° | 1593 | 1550 | 1539 |
| 15° | 1571 | 1498 | 1459 |
| 20° | 1542 | 1428 | 1361 |
| 25° | 1512 | 1349 | 1266 |
| 30° | 1472 | 1267 | 1145 |
| 35° | 1433 | 1180 | 1040 |
| 40° | 1393 | 1090 | 919  |
| 45° | 1347 | 990  | 809  |
| 50° | 1300 | 889  | 702  |
| 55° | 1250 | 781  | 598  |
| 60° | 1192 | 668  | 493  |
| 65° | 1126 | 553  | 443  |
| 70° | 1045 | 446  | 401  |
| 75° | 944  | 393  | 365  |
| 80° | 797  | 329  | 316  |
| 85° | 556  | 220  | 237  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1347 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 189.5  | 2.3       |
| 10°-20°   | 520.2  | 6.3       |
| 20°-30°   | 730.3  | 8.9       |
| 30°-40°   | 796.1  | 9.7       |
| 40°-50°   | 731.7  | 8.9       |
| 50°-60°   | 574.6  | 7.0       |
| 60°-70°   | 374.0  | 4.6       |
| 70°-80°   | 192.5  | 2.3       |
| 80°-90°   | 51.6   | 0.6       |
| 90°-100°  | 45.4   | 0.6       |
| 100°-110° | 169.1  | 2.1       |
| 110°-120° | 448.5  | 5.5       |
| 120°-130° | 743.9  | 9.1       |
| 130°-140° | 790.2  | 9.6       |
| 140°-150° | 734.4  | 9.0       |
| 150°-160° | 590.4  | 7.2       |
| 160°-170° | 380.5  | 4.6       |
| 170°-180° | 130.9  | 1.6       |
| 0°-30°    | 1439.9 | 17.6      |
| 0°-40°    | 2236.0 | 27.3      |
| 0°-60°    | 3542.3 | 43.2      |
| 0°-90°    | 4160.4 | 50.8      |
| 90°-120°  | 663.0  | 8.1       |
| 90°-150°  | 2931.5 | 35.8      |
| 90°-180°  | 4033.0 | 49.2      |
| 0°-180°   | 8193.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2022 | 2022  | 2022 | 2022  | 2022 |      |
| 5°   | 2022 | 2013  | 1989 | 2005  | 2000 | 192  |
| 15°  | 1923 | 1903  | 1841 | 1806  | 1788 | 542  |
| 25°  | 1746 | 1687  | 1566 | 1491  | 1464 | 803  |
| 35°  | 1504 | 1411  | 1250 | 1134  | 1094 | 941  |
| 45°  | 1230 | 1107  | 915  | 785   | 741  | 950  |
| 55°  | 935  | 792   | 595  | 485   | 450  | 835  |
| 65°  | 631  | 483   | 318  | 256   | 251  | 626  |
| 75°  | 337  | 208   | 146  | 134   | 132  | 356  |
| 85°  | 79   | 40    | 35   | 35    | 35   | 90   |
| 90°  | 1    | 12    | 20   | 25    | 27   | 8    |
| 95°  | 65   | 32    | 39   | 44    | 43   | 77   |
| 105° | 303  | 333   | 61   | 72    | 76   | 323  |
| 115° | 572  | 589   | 614  | 153   | 82   | 564  |
| 125° | 809  | 822   | 841  | 848   | 851  | 722  |
| 135° | 1002 | 1018  | 1026 | 1036  | 1034 | 774  |
| 145° | 1162 | 1161  | 1178 | 1185  | 1180 | 727  |
| 155° | 1279 | 1270  | 1282 | 1288  | 1280 | 589  |
| 165° | 1348 | 1342  | 1345 | 1352  | 1345 | 381  |
| 175° | 1379 | 1372  | 1374 | 1381  | 1371 | 131  |
| 180° | 1376 | 1376  | 1376 | 1376  | 1376 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2021.8 | 2021.8 | 2021.8 | 2021.8 | 2021.8 |
| 2.5°   | 2030.9 | 2021.8 | 2001.6 | 2020.0 | 2016.3 |
| 5°     | 2021.8 | 2012.6 | 1988.8 | 2005.3 | 1999.8 |
| 7.5°   | 2005.3 | 1994.4 | 1968.8 | 1976.0 | 1966.8 |
| 10°    | 1983.3 | 1970.5 | 1934.1 | 1928.4 | 1917.5 |
| 12.5°  | 1956.0 | 1939.4 | 1889.9 | 1879.1 | 1858.9 |
| 15°    | 1923.0 | 1902.7 | 1840.6 | 1805.9 | 1787.6 |
| 17.5°  | 1884.6 | 1855.2 | 1778.3 | 1738.1 | 1708.9 |
| 20°    | 1840.6 | 1803.9 | 1712.5 | 1666.9 | 1626.5 |
| 22.5°  | 1793.1 | 1750.9 | 1644.8 | 1582.7 | 1555.3 |
| 25°    | 1745.6 | 1686.9 | 1566.2 | 1491.3 | 1463.7 |
| 27.5°  | 1688.9 | 1626.5 | 1493.0 | 1407.0 | 1364.9 |
| 30°    | 1628.5 | 1558.8 | 1412.4 | 1319.2 | 1269.7 |
| 32.5°  | 1569.9 | 1485.6 | 1335.8 | 1225.9 | 1180.1 |
| 35°    | 1504.1 | 1410.7 | 1249.8 | 1134.4 | 1094.0 |
| 37.5°  | 1440.0 | 1339.2 | 1169.2 | 1042.8 | 997.2  |
| 40°    | 1372.2 | 1262.6 | 1084.9 | 955.0  | 907.5  |
| 42.5°  | 1302.8 | 1185.7 | 1000.9 | 865.4  | 819.8  |
| 45°    | 1229.6 | 1106.8 | 914.9  | 784.8  | 740.9  |
| 47.5°  | 1160.1 | 1030.2 | 832.6  | 702.5  | 662.3  |
| 50°    | 1083.2 | 953.3  | 752.0  | 625.7  | 587.4  |
| 52.5°  | 1008.0 | 870.8  | 675.1  | 554.4  | 519.7  |
| 55°    | 934.9  | 792.2  | 594.6  | 484.9  | 450.1  |
| 57.5°  | 860.0  | 713.5  | 523.3  | 420.9  | 391.5  |
| 60°    | 783.1  | 636.7  | 448.3  | 355.1  | 325.7  |
| 62.5°  | 708.2  | 561.8  | 384.2  | 296.4  | 281.8  |
| 65°    | 631.3  | 483.0  | 318.4  | 256.2  | 250.6  |
| 67.5°  | 558.1  | 409.8  | 256.2  | 225.0  | 219.6  |
| 70°    | 481.2  | 338.5  | 212.1  | 194.0  | 186.5  |
| 72.5°  | 408.1  | 272.6  | 177.4  | 162.9  | 159.1  |
| 75°    | 336.6  | 208.5  | 146.3  | 133.5  | 131.8  |
| 77.5°  | 265.4  | 148.1  | 115.3  | 107.9  | 104.3  |
| 80°    | 199.3  | 106.2  | 87.7   | 80.6   | 80.6   |
| 82.5°  | 139.0  | 71.4   | 60.3   | 56.7   | 56.7   |
| 85°    | 78.6   | 40.2   | 34.7   | 34.7   | 34.7   |
| 87.5°  | 29.4   | 14.6   | 14.6   | 12.8   | 12.8   |
| 90°    | 1.0    | 11.9   | 19.9   | 24.9   | 26.8   |
| 92.5°  | 24.9   | 21.0   | 23.9   | 25.9   | 26.8   |
| 95°    | 64.7   | 31.8   | 38.8   | 43.9   | 42.8   |
| 97.5°  | 116.4  | 34.9   | 50.7   | 53.8   | 54.7   |
| 100°   | 176.3  | 39.9   | 56.7   | 64.7   | 66.7   |
| 102.5° | 241.9  | 239.9  | 58.8   | 69.6   | 72.7   |
| 105°   | 302.6  | 332.6  | 60.7   | 71.7   | 75.7   |
| 107.5° | 373.3  | 398.1  | 62.8   | 73.6   | 77.7   |
| 110°   | 441.1  | 461.9  | 174.2  | 74.7   | 78.6   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.8  | 522.6  | 505.7  | 76.6   | 79.7   |
| 115°   | 572.4  | 589.3  | 614.2  | 153.4  | 81.7   |
| 117.5° | 631.1  | 651.0  | 668.1  | 525.5  | 264.8  |
| 120°   | 696.8  | 711.8  | 729.7  | 741.7  | 607.2  |
| 122.5° | 752.5  | 768.5  | 788.5  | 794.4  | 795.5  |
| 125°   | 809.3  | 822.3  | 841.2  | 848.2  | 851.2  |
| 127.5° | 861.0  | 875.0  | 890.1  | 899.9  | 900.9  |
| 130°   | 909.9  | 925.9  | 936.7  | 947.7  | 946.8  |
| 132.5° | 959.7  | 972.7  | 983.5  | 992.5  | 991.6  |
| 135°   | 1001.5 | 1017.5 | 1026.3 | 1036.4 | 1034.4 |
| 137.5° | 1045.2 | 1057.2 | 1067.2 | 1077.2 | 1074.2 |
| 140°   | 1088.0 | 1096.1 | 1106.9 | 1115.9 | 1111.0 |
| 142.5° | 1124.0 | 1131.0 | 1143.9 | 1151.8 | 1146.8 |
| 145°   | 1161.8 | 1160.7 | 1177.6 | 1184.6 | 1179.7 |
| 147.5° | 1194.6 | 1191.6 | 1208.5 | 1213.5 | 1209.6 |
| 150°   | 1226.5 | 1219.5 | 1235.4 | 1241.4 | 1236.4 |
| 152.5° | 1253.3 | 1245.4 | 1260.3 | 1266.3 | 1259.3 |
| 155°   | 1279.2 | 1270.3 | 1282.2 | 1288.2 | 1280.3 |
| 157.5° | 1300.1 | 1292.2 | 1301.1 | 1308.1 | 1300.1 |
| 160°   | 1318.1 | 1312.1 | 1318.1 | 1324.0 | 1317.0 |
| 162.5° | 1333.9 | 1328.0 | 1332.9 | 1339.9 | 1331.0 |
| 165°   | 1347.9 | 1342.0 | 1344.9 | 1351.8 | 1344.9 |
| 167.5° | 1358.9 | 1352.8 | 1355.9 | 1362.9 | 1353.9 |
| 170°   | 1367.8 | 1361.8 | 1363.8 | 1370.8 | 1361.8 |
| 172.5° | 1373.8 | 1367.8 | 1369.9 | 1376.8 | 1367.8 |
| 175°   | 1378.8 | 1371.7 | 1373.8 | 1380.7 | 1370.8 |
| 177.5° | 1380.7 | 1373.8 | 1374.8 | 1381.8 | 1372.8 |
| 180°   | 1375.7 | 1375.7 | 1375.7 | 1375.7 | 1375.7 |

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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 | 8.86             | 9.70  | 9.82  | 10.66 | 11.93 | 4.83           | 5.67 | 5.79 | 6.64 | 7.90  |
|                 | 3H   | 10.54            | 11.29 | 11.51 | 12.26 | 13.55 | 6.02           | 6.77 | 6.99 | 7.75 | 9.04  |
|                 | 4H   | 11.15            | 11.85 | 12.13 | 12.83 | 14.13 | 6.48           | 7.18 | 7.46 | 8.16 | 9.46  |
|                 | 6H   | 11.57            | 12.22 | 12.56 | 13.21 | 14.51 | 6.80           | 7.45 | 7.79 | 8.44 | 9.74  |
|                 | 8H   | 11.70            | 12.31 | 12.69 | 13.32 | 14.62 | 6.89           | 7.51 | 7.89 | 8.51 | 9.81  |
|                 | 12H  | 11.76            | 12.35 | 12.76 | 13.34 | 14.67 | 6.93           | 7.52 | 7.94 | 8.52 | 9.85  |
| 4H              | 2H   | 8.88             | 9.59  | 9.87  | 10.57 | 11.86 | 5.43           | 6.14 | 6.42 | 7.12 | 8.41  |
|                 | 3H   | 10.71            | 11.30 | 11.71 | 12.31 | 13.61 | 6.78           | 7.37 | 7.78 | 8.38 | 9.69  |
|                 | 4H   | 11.40            | 11.94 | 12.41 | 12.94 | 14.27 | 7.33           | 7.87 | 8.34 | 8.87 | 10.20 |
|                 | 6H   | 11.92            | 12.38 | 12.93 | 13.40 | 14.73 | 7.75           | 8.21 | 8.77 | 9.24 | 10.57 |
|                 | 8H   | 12.09            | 12.52 | 13.11 | 13.54 | 14.89 | 7.88           | 8.31 | 8.90 | 9.33 | 10.68 |
|                 | 12H  | 12.19            | 12.58 | 13.22 | 13.61 | 14.96 | 7.95           | 8.34 | 8.98 | 9.37 | 10.72 |
| 8H              | 4H   | 11.37            | 11.80 | 12.39 | 12.82 | 14.16 | 7.61           | 8.04 | 8.63 | 9.06 | 10.40 |
|                 | 6H   | 11.94            | 12.29 | 12.98 | 13.35 | 14.69 | 8.13           | 8.49 | 9.17 | 9.55 | 10.89 |
|                 | 8H   | 12.15            | 12.47 | 13.20 | 13.51 | 14.87 | 8.32           | 8.64 | 9.37 | 9.68 | 11.04 |
|                 | 12H  | 12.29            | 12.57 | 13.34 | 13.61 | 15.01 | 8.44           | 8.72 | 9.50 | 9.76 | 11.16 |
| 12H             | 4H   | 11.32            | 11.71 | 12.36 | 12.75 | 14.09 | 7.62           | 8.00 | 8.65 | 9.04 | 10.39 |
|                 | 6H   | 11.91            | 12.22 | 12.96 | 13.27 | 14.63 | 8.18           | 8.49 | 9.23 | 9.54 | 10.90 |
|                 | 8H   | 12.13            | 12.41 | 13.18 | 13.45 | 14.85 | 8.39           | 8.67 | 9.44 | 9.71 | 11.11 |