

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: P922035

Luminaire Tested: DFN2DIP-PN2F0-060D040US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922035  
REPORT IS A COMBINATION OF REPORTS P901010 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-060D040US940-RLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

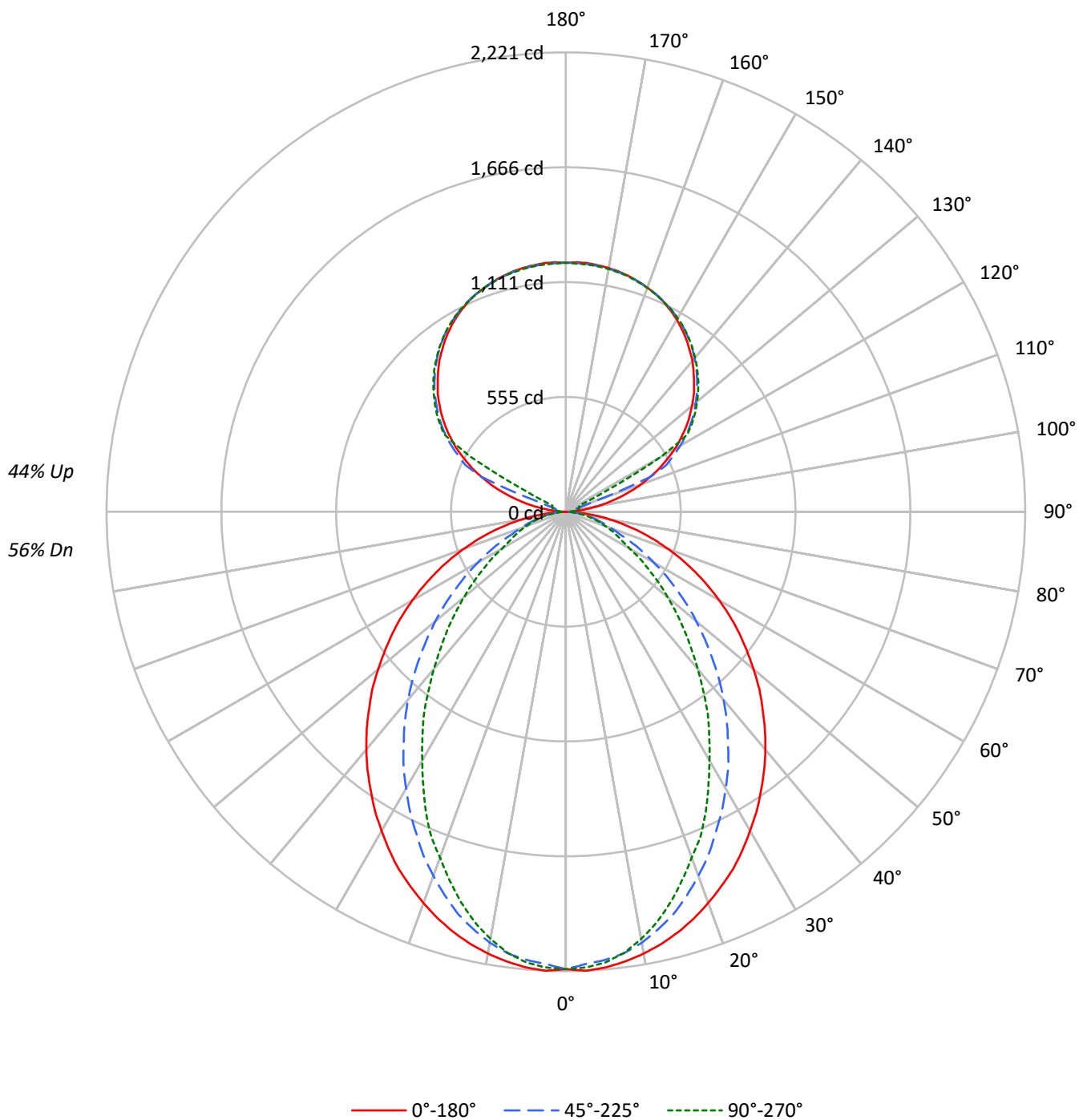
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8078.9 lumens  
Efficiency: N/A  
Efficacy: 84.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 95.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 56 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 50 | 48 | 46 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 31 |
| 6   | 65  | 54  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 39 | 34 | 39 | 34 | 31 | 33 | 30 | 27 |
| 7   | 61  | 49  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4789 | 4789 | 4789 |
| 5°  | 4789 | 4703 | 4736 |
| 10° | 4734 | 4601 | 4575 |
| 15° | 4661 | 4438 | 4331 |
| 20° | 4567 | 4220 | 4033 |
| 25° | 4471 | 3976 | 3745 |
| 30° | 4345 | 3727 | 3383 |
| 35° | 4220 | 3460 | 3065 |
| 40° | 4093 | 3185 | 2702 |
| 45° | 3946 | 2882 | 2373 |
| 50° | 3794 | 2577 | 2052 |
| 55° | 3634 | 2252 | 1744 |
| 60° | 3449 | 1914 | 1429 |
| 65° | 3235 | 1571 | 1279 |
| 70° | 2975 | 1251 | 1147 |
| 75° | 2649 | 1083 | 1030 |
| 80° | 2179 | 880  | 872  |
| 85° | 1425 | 547  | 619  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3946 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 207.2  | 2.6       |
| 10°-20°   | 568.9  | 7.0       |
| 20°-30°   | 798.7  | 9.9       |
| 30°-40°   | 870.7  | 10.8      |
| 40°-50°   | 800.3  | 9.9       |
| 50°-60°   | 628.5  | 7.8       |
| 60°-70°   | 409.1  | 5.1       |
| 70°-80°   | 210.6  | 2.6       |
| 80°-90°   | 55.9   | 0.7       |
| 90°-100°  | 39.7   | 0.5       |
| 100°-110° | 148.0  | 1.8       |
| 110°-120° | 392.4  | 4.9       |
| 120°-130° | 650.9  | 8.1       |
| 130°-140° | 691.4  | 8.6       |
| 140°-150° | 642.6  | 8.0       |
| 150°-160° | 516.6  | 6.4       |
| 160°-170° | 332.9  | 4.1       |
| 170°-180° | 114.6  | 1.4       |
| 0°-30°    | 1574.9 | 19.5      |
| 0°-40°    | 2445.6 | 30.3      |
| 0°-60°    | 3874.3 | 48.0      |
| 0°-90°    | 4549.9 | 56.3      |
| 90°-120°  | 580.1  | 7.2       |
| 90°-150°  | 2565.0 | 31.7      |
| 90°-180°  | 3529.0 | 43.7      |
| 0°-180°   | 8078.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2211 | 2211  | 2211 | 2211  | 2211 |      |
| 5°   | 2211 | 2201  | 2175 | 2193  | 2187 | 210  |
| 15°  | 2103 | 2081  | 2013 | 1975  | 1955 | 593  |
| 25°  | 1909 | 1845  | 1713 | 1631  | 1601 | 878  |
| 35°  | 1645 | 1543  | 1367 | 1241  | 1197 | 1030 |
| 45°  | 1345 | 1211  | 1001 | 858   | 810  | 1039 |
| 55°  | 1022 | 866   | 650  | 530   | 492  | 914  |
| 65°  | 690  | 528   | 348  | 280   | 274  | 685  |
| 75°  | 368  | 228   | 160  | 146   | 144  | 389  |
| 85°  | 86   | 44    | 38   | 38    | 38   | 99   |
| 90°  | 1    | 10    | 17   | 22    | 24   | 8    |
| 95°  | 56   | 28    | 34   | 38    | 38   | 67   |
| 105° | 265  | 291   | 53   | 63    | 66   | 283  |
| 115° | 501  | 516   | 537  | 134   | 72   | 493  |
| 125° | 708  | 720   | 736  | 742   | 745  | 632  |
| 135° | 876  | 890   | 898  | 907   | 905  | 677  |
| 145° | 1016 | 1016  | 1030 | 1036  | 1032 | 636  |
| 155° | 1119 | 1112  | 1122 | 1127  | 1120 | 516  |
| 165° | 1179 | 1174  | 1177 | 1183  | 1177 | 333  |
| 175° | 1206 | 1200  | 1202 | 1208  | 1199 | 115  |
| 180° | 1204 | 1204  | 1204 | 1204  | 1204 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2211.3 | 2211.3 | 2211.3 | 2211.3 | 2211.3 |
| 2.5°   | 2221.3 | 2211.3 | 2189.1 | 2209.3 | 2205.3 |
| 5°     | 2211.3 | 2201.3 | 2175.1 | 2193.3 | 2187.3 |
| 7.5°   | 2193.3 | 2181.3 | 2153.3 | 2161.1 | 2151.2 |
| 10°    | 2169.2 | 2155.2 | 2115.3 | 2109.2 | 2097.2 |
| 12.5°  | 2139.3 | 2121.2 | 2067.1 | 2055.2 | 2033.1 |
| 15°    | 2103.2 | 2081.1 | 2013.1 | 1975.1 | 1955.2 |
| 17.5°  | 2061.2 | 2029.1 | 1945.0 | 1901.0 | 1869.0 |
| 20°    | 2013.1 | 1973.0 | 1873.0 | 1823.1 | 1779.0 |
| 22.5°  | 1961.1 | 1915.0 | 1798.9 | 1731.0 | 1701.0 |
| 25°    | 1909.2 | 1845.0 | 1713.0 | 1631.0 | 1600.9 |
| 27.5°  | 1847.2 | 1779.0 | 1632.9 | 1538.8 | 1492.8 |
| 30°    | 1781.1 | 1704.9 | 1544.8 | 1442.9 | 1388.7 |
| 32.5°  | 1717.0 | 1624.9 | 1461.0 | 1340.8 | 1290.7 |
| 35°    | 1645.0 | 1542.9 | 1366.9 | 1240.7 | 1196.6 |
| 37.5°  | 1574.9 | 1464.7 | 1278.8 | 1140.6 | 1090.7 |
| 40°    | 1500.8 | 1380.9 | 1186.6 | 1044.5 | 992.6  |
| 42.5°  | 1424.9 | 1296.8 | 1094.7 | 946.5  | 896.6  |
| 45°    | 1344.8 | 1210.6 | 1000.7 | 858.4  | 810.4  |
| 47.5°  | 1268.8 | 1126.8 | 910.6  | 768.4  | 724.4  |
| 50°    | 1184.7 | 1042.7 | 822.5  | 684.3  | 642.5  |
| 52.5°  | 1102.5 | 952.4  | 738.4  | 606.4  | 568.4  |
| 55°    | 1022.5 | 866.5  | 650.3  | 530.4  | 492.3  |
| 57.5°  | 940.6  | 780.4  | 572.4  | 460.3  | 428.2  |
| 60°    | 856.5  | 696.4  | 490.3  | 388.3  | 356.2  |
| 62.5°  | 774.5  | 614.5  | 420.2  | 324.2  | 308.3  |
| 65°    | 690.5  | 528.2  | 348.2  | 280.3  | 274.1  |
| 67.5°  | 610.4  | 448.2  | 280.3  | 246.1  | 240.1  |
| 70°    | 526.3  | 370.2  | 232.0  | 212.1  | 204.0  |
| 72.5°  | 446.3  | 298.1  | 194.0  | 178.2  | 174.1  |
| 75°    | 368.2  | 228.0  | 160.1  | 146.1  | 144.2  |
| 77.5°  | 290.3  | 162.0  | 126.1  | 118.1  | 114.0  |
| 80°    | 218.0  | 116.1  | 95.9   | 88.1   | 88.1   |
| 82.5°  | 152.0  | 78.1   | 66.0   | 62.0   | 62.0   |
| 85°    | 86.0   | 44.0   | 38.0   | 38.0   | 38.0   |
| 87.5°  | 32.1   | 16.0   | 16.0   | 14.0   | 14.0   |
| 90°    | 0.8    | 10.4   | 17.4   | 21.8   | 23.5   |
| 92.5°  | 21.8   | 18.3   | 20.9   | 22.6   | 23.5   |
| 95°    | 56.5   | 27.8   | 33.9   | 38.3   | 37.5   |
| 97.5°  | 101.9  | 30.5   | 44.4   | 47.1   | 47.9   |
| 100°   | 154.2  | 34.9   | 49.7   | 56.5   | 58.3   |
| 102.5° | 211.6  | 210.0  | 51.4   | 60.9   | 63.6   |
| 105°   | 264.7  | 291.0  | 53.1   | 62.7   | 66.2   |
| 107.5° | 326.6  | 348.4  | 54.9   | 64.5   | 67.9   |
| 110°   | 385.9  | 404.1  | 152.5  | 65.4   | 68.8   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 441.7  | 457.3  | 442.5  | 67.1   | 69.7   |
| 115°   | 500.8  | 515.6  | 537.4  | 134.1  | 71.5   |
| 117.5° | 552.2  | 569.6  | 584.5  | 459.9  | 231.7  |
| 120°   | 609.8  | 622.8  | 638.5  | 649.0  | 531.4  |
| 122.5° | 658.4  | 672.4  | 689.9  | 695.1  | 696.0  |
| 125°   | 708.1  | 719.5  | 736.0  | 742.2  | 744.8  |
| 127.5° | 753.4  | 765.6  | 778.7  | 787.5  | 788.3  |
| 130°   | 796.1  | 810.1  | 819.6  | 829.2  | 828.4  |
| 132.5° | 839.6  | 851.0  | 860.6  | 868.4  | 867.6  |
| 135°   | 876.3  | 890.3  | 898.0  | 906.8  | 905.1  |
| 137.5° | 914.5  | 925.0  | 933.8  | 942.4  | 939.9  |
| 140°   | 952.0  | 959.0  | 968.6  | 976.4  | 972.1  |
| 142.5° | 983.5  | 989.5  | 1000.9 | 1007.7 | 1003.4 |
| 145°   | 1016.5 | 1015.7 | 1030.4 | 1036.5 | 1032.2 |
| 147.5° | 1045.2 | 1042.6 | 1057.4 | 1061.8 | 1058.4 |
| 150°   | 1073.1 | 1067.0 | 1081.0 | 1086.2 | 1081.8 |
| 152.5° | 1096.6 | 1089.7 | 1102.7 | 1108.0 | 1101.9 |
| 155°   | 1119.3 | 1111.5 | 1121.9 | 1127.1 | 1120.2 |
| 157.5° | 1137.6 | 1130.6 | 1138.5 | 1144.6 | 1137.6 |
| 160°   | 1153.2 | 1148.0 | 1153.2 | 1158.4 | 1152.4 |
| 162.5° | 1167.2 | 1162.0 | 1166.4 | 1172.4 | 1164.6 |
| 165°   | 1179.4 | 1174.2 | 1176.8 | 1182.9 | 1176.8 |
| 167.5° | 1189.0 | 1183.7 | 1186.4 | 1192.5 | 1184.6 |
| 170°   | 1196.9 | 1191.6 | 1193.3 | 1199.4 | 1191.6 |
| 172.5° | 1202.0 | 1196.9 | 1198.6 | 1204.7 | 1196.9 |
| 175°   | 1206.3 | 1200.2 | 1202.0 | 1208.1 | 1199.4 |
| 177.5° | 1208.1 | 1202.0 | 1202.9 | 1209.1 | 1201.2 |
| 180°   | 1203.8 | 1203.8 | 1203.8 | 1203.8 | 1203.8 |

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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 | 13.04            | 13.93 | 13.95 | 14.85 | 16.03 | 9.01           | 9.90  | 9.92  | 10.82 | 12.00 |
|                 | 3H   | 14.70            | 15.50 | 15.62 | 16.43 | 17.63 | 10.19          | 10.98 | 11.11 | 11.91 | 13.12 |
|                 | 4H   | 15.30            | 16.05 | 16.24 | 16.99 | 18.20 | 10.63          | 11.38 | 11.56 | 12.31 | 13.53 |
|                 | 6H   | 15.71            | 16.40 | 16.66 | 17.34 | 18.57 | 10.94          | 11.62 | 11.88 | 12.57 | 13.79 |
|                 | 8H   | 15.83            | 16.48 | 16.78 | 17.44 | 18.67 | 11.02          | 11.68 | 11.97 | 12.63 | 13.86 |
|                 | 12H  | 15.88            | 16.51 | 16.84 | 17.46 | 18.71 | 11.06          | 11.68 | 12.02 | 12.63 | 13.88 |
| 4H              | 2H   | 13.06            | 13.81 | 14.00 | 14.75 | 15.96 | 9.60           | 10.35 | 10.54 | 11.29 | 12.50 |
|                 | 3H   | 14.87            | 15.49 | 15.82 | 16.46 | 17.69 | 10.94          | 11.56 | 11.89 | 12.53 | 13.75 |
|                 | 4H   | 15.55            | 16.12 | 16.51 | 17.08 | 18.33 | 11.47          | 12.04 | 12.43 | 13.00 | 14.25 |
|                 | 6H   | 16.05            | 16.54 | 17.02 | 17.52 | 18.78 | 11.88          | 12.36 | 12.85 | 13.35 | 14.60 |
|                 | 8H   | 16.22            | 16.67 | 17.19 | 17.65 | 18.92 | 12.00          | 12.45 | 12.97 | 13.43 | 14.70 |
|                 | 12H  | 16.30            | 16.71 | 17.30 | 17.71 | 18.98 | 12.06          | 12.46 | 13.05 | 13.46 | 14.73 |
| 8H              | 4H   | 15.52            | 15.97 | 16.49 | 16.95 | 18.22 | 11.75          | 12.20 | 12.72 | 13.18 | 14.45 |
|                 | 6H   | 16.07            | 16.44 | 17.07 | 17.46 | 18.73 | 12.24          | 12.62 | 13.24 | 13.64 | 14.90 |
|                 | 8H   | 16.27            | 16.60 | 17.28 | 17.61 | 18.89 | 12.42          | 12.75 | 13.43 | 13.76 | 15.04 |
|                 | 12H  | 16.40            | 16.69 | 17.41 | 17.69 | 19.02 | 12.53          | 12.82 | 13.54 | 13.82 | 15.15 |
| 12H             | 4H   | 15.47            | 15.88 | 16.47 | 16.88 | 18.15 | 11.75          | 12.16 | 12.74 | 13.15 | 14.43 |
|                 | 6H   | 16.04            | 16.37 | 17.05 | 17.38 | 18.66 | 12.29          | 12.62 | 13.29 | 13.63 | 14.91 |
|                 | 8H   | 16.25            | 16.54 | 17.26 | 17.54 | 18.87 | 12.48          | 12.78 | 13.49 | 13.78 | 15.11 |