

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: P906323

Luminaire Tested: DFN2DIP-SQ2F0-080D040US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906323  
REPORT IS A COMBINATION OF REPORTS P901314 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D040US835-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

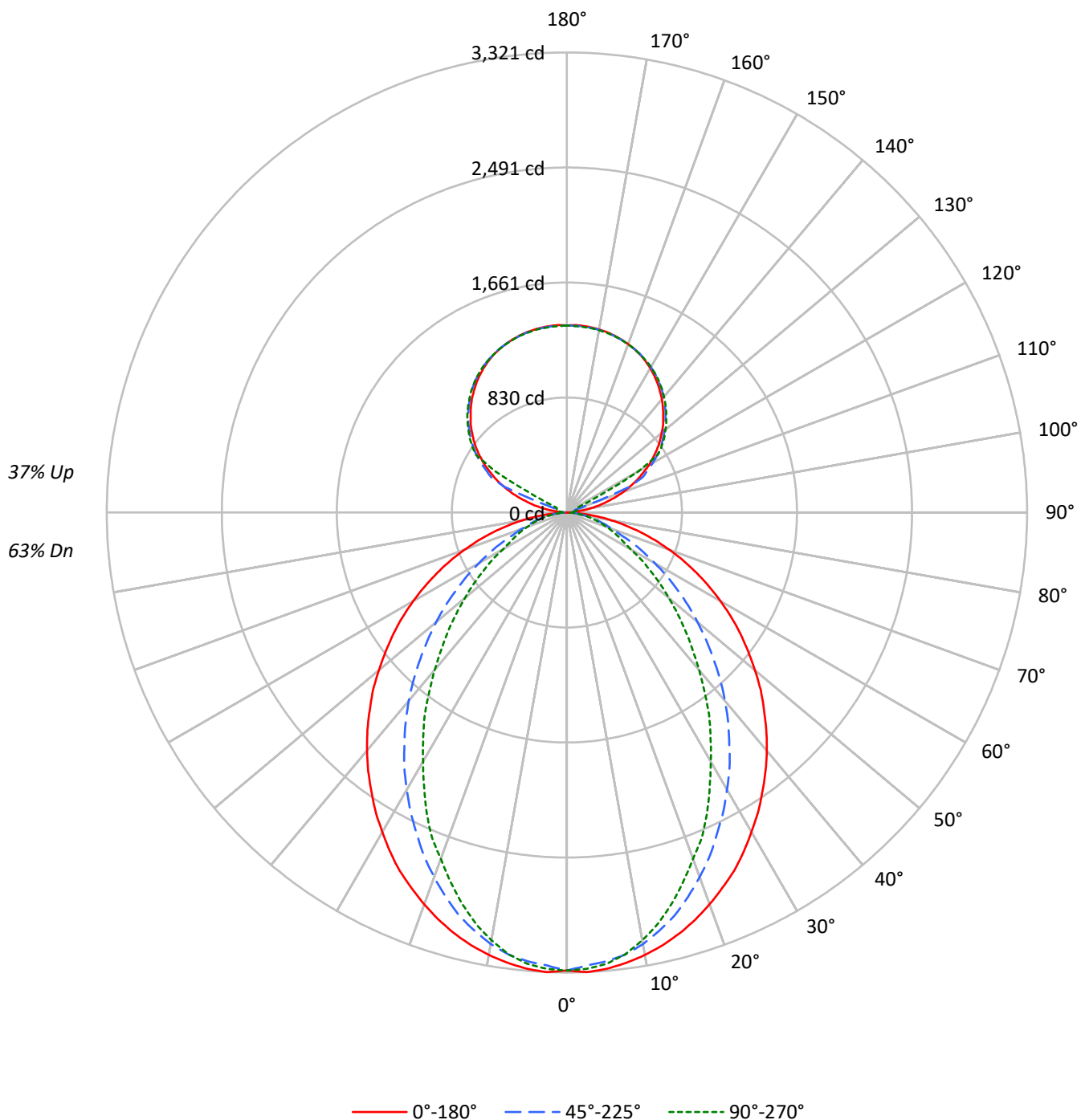
Lumens per Lamp: N/A  
Luminaire Lumens: 10760.0 lumens  
Efficiency: N/A  
Efficacy: 99.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 108.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 91 | 91 | 91 | 79 | 79 | 79 | 68 | 68 | 68 |
| 1   | 101 | 97  | 93  | 90  | 95  | 91  | 88  | 85  | 80 | 78 | 76 | 71 | 69 | 67 | 61 | 60 | 59 |
| 2   | 93  | 86  | 80  | 75  | 87  | 81  | 75  | 71  | 71 | 67 | 64 | 63 | 60 | 57 | 55 | 52 | 51 |
| 3   | 85  | 76  | 69  | 63  | 80  | 72  | 65  | 60  | 63 | 58 | 54 | 56 | 52 | 49 | 49 | 46 | 44 |
| 4   | 78  | 68  | 60  | 54  | 73  | 64  | 57  | 52  | 57 | 51 | 47 | 50 | 46 | 43 | 44 | 41 | 38 |
| 5   | 72  | 61  | 53  | 47  | 67  | 57  | 50  | 45  | 51 | 45 | 41 | 46 | 41 | 37 | 40 | 37 | 34 |
| 6   | 67  | 55  | 47  | 41  | 62  | 52  | 45  | 39  | 46 | 41 | 36 | 41 | 37 | 33 | 37 | 33 | 30 |
| 7   | 62  | 50  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 38 | 33 | 30 | 34 | 30 | 27 |
| 8   | 58  | 45  | 38  | 32  | 54  | 43  | 36  | 31  | 39 | 33 | 29 | 35 | 30 | 27 | 31 | 27 | 24 |
| 9   | 54  | 42  | 34  | 29  | 51  | 40  | 33  | 28  | 36 | 30 | 26 | 32 | 27 | 24 | 29 | 25 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 37  | 30  | 25  | 33 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7270 | 7270 | 7270 |
| 5°  | 7269 | 7139 | 7191 |
| 10° | 7185 | 6983 | 6947 |
| 15° | 7073 | 6737 | 6576 |
| 20° | 6930 | 6405 | 6124 |
| 25° | 6783 | 6034 | 5688 |
| 30° | 6590 | 5656 | 5138 |
| 35° | 6400 | 5251 | 4656 |
| 40° | 6206 | 4834 | 4104 |
| 45° | 5983 | 4373 | 3605 |
| 50° | 5750 | 3910 | 3118 |
| 55° | 5506 | 3416 | 2651 |
| 60° | 5223 | 2902 | 2173 |
| 65° | 4897 | 2382 | 1944 |
| 70° | 4501 | 1898 | 1745 |
| 75° | 4002 | 1642 | 1567 |
| 80° | 3286 | 1334 | 1327 |
| 85° | 2139 | 828  | 945  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5983 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 309.9   | 2.9       |
| 10°-20°   | 850.7   | 7.9       |
| 20°-30°   | 1194.3  | 11.1      |
| 30°-40°   | 1301.9  | 12.1      |
| 40°-50°   | 1196.6  | 11.1      |
| 50°-60°   | 939.7   | 8.7       |
| 60°-70°   | 611.7   | 5.7       |
| 70°-80°   | 314.9   | 2.9       |
| 80°-90°   | 82.8    | 0.8       |
| 90°-100°  | 44.5    | 0.4       |
| 100°-110° | 165.9   | 1.5       |
| 110°-120° | 440.1   | 4.1       |
| 120°-130° | 729.9   | 6.8       |
| 130°-140° | 775.4   | 7.2       |
| 140°-150° | 720.6   | 6.7       |
| 150°-160° | 579.4   | 5.4       |
| 160°-170° | 373.3   | 3.5       |
| 170°-180° | 128.5   | 1.2       |
| 0°-30°    | 2354.9  | 21.9      |
| 0°-40°    | 3656.8  | 34.0      |
| 0°-60°    | 5793.1  | 53.8      |
| 0°-90°    | 6802.4  | 63.2      |
| 90°-120°  | 650.5   | 6.0       |
| 90°-150°  | 2876.4  | 26.7      |
| 90°-180°  | 3958.0  | 36.8      |
| 0°-180°   | 10760.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3306 | 3306  | 3306 | 3306  | 3306 |      |
| 5°   | 3306 | 3292  | 3252 | 3279  | 3270 | 314  |
| 15°  | 3145 | 3112  | 3010 | 2953  | 2924 | 886  |
| 25°  | 2855 | 2759  | 2561 | 2439  | 2394 | 1313 |
| 35°  | 2460 | 2307  | 2044 | 1855  | 1789 | 1540 |
| 45°  | 2011 | 1810  | 1496 | 1284  | 1212 | 1553 |
| 55°  | 1529 | 1296  | 972  | 793   | 736  | 1366 |
| 65°  | 1032 | 790   | 521  | 419   | 410  | 1024 |
| 75°  | 550  | 341   | 239  | 218   | 216  | 582  |
| 85°  | 129  | 66    | 57   | 57    | 57   | 148  |
| 90°  | 1    | 12    | 20   | 24    | 26   | 10   |
| 95°  | 63   | 31    | 38   | 43    | 42   | 75   |
| 105° | 297  | 326   | 60   | 70    | 74   | 317  |
| 115° | 562  | 578   | 603  | 150   | 80   | 553  |
| 125° | 794  | 807   | 825  | 832   | 835  | 708  |
| 135° | 983  | 998   | 1007 | 1017  | 1015 | 759  |
| 145° | 1140 | 1139  | 1156 | 1162  | 1158 | 713  |
| 155° | 1255 | 1246  | 1258 | 1264  | 1256 | 578  |
| 165° | 1323 | 1317  | 1320 | 1326  | 1320 | 374  |
| 175° | 1353 | 1346  | 1348 | 1355  | 1345 | 129  |
| 180° | 1350 | 1350  | 1350 | 1350  | 1350 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3306.4 | 3306.4 | 3306.4 | 3306.4 | 3306.4 |
| 2.5°   | 3321.3 | 3306.4 | 3273.4 | 3303.5 | 3297.5 |
| 5°     | 3306.4 | 3291.5 | 3252.4 | 3279.4 | 3270.5 |
| 7.5°   | 3279.4 | 3261.6 | 3219.7 | 3231.5 | 3216.5 |
| 10°    | 3243.5 | 3222.6 | 3162.9 | 3153.7 | 3135.9 |
| 12.5°  | 3198.8 | 3171.8 | 3090.8 | 3073.0 | 3040.0 |
| 15°    | 3144.8 | 3111.8 | 3010.2 | 2953.4 | 2923.5 |
| 17.5°  | 3081.9 | 3034.0 | 2908.3 | 2842.6 | 2794.6 |
| 20°    | 3010.2 | 2950.2 | 2800.7 | 2726.1 | 2660.0 |
| 22.5°  | 2932.4 | 2863.5 | 2689.9 | 2588.3 | 2543.5 |
| 25°    | 2854.6 | 2758.8 | 2561.3 | 2438.8 | 2393.7 |
| 27.5°  | 2761.9 | 2660.0 | 2441.6 | 2301.0 | 2232.1 |
| 30°    | 2663.2 | 2549.2 | 2309.9 | 2157.5 | 2076.5 |
| 32.5°  | 2567.3 | 2429.6 | 2184.5 | 2004.8 | 1929.9 |
| 35°    | 2459.7 | 2307.0 | 2043.8 | 1855.3 | 1789.2 |
| 37.5°  | 2354.9 | 2190.2 | 1912.1 | 1705.4 | 1630.8 |
| 40°    | 2244.2 | 2064.8 | 1774.3 | 1561.9 | 1484.1 |
| 42.5°  | 2130.5 | 1939.1 | 1636.8 | 1415.3 | 1340.6 |
| 45°    | 2010.8 | 1810.2 | 1496.2 | 1283.5 | 1211.8 |
| 47.5°  | 1897.2 | 1684.8 | 1361.6 | 1148.9 | 1083.2 |
| 50°    | 1771.4 | 1559.1 | 1229.9 | 1023.2 | 960.6  |
| 52.5°  | 1648.6 | 1424.1 | 1104.1 | 906.7  | 849.9  |
| 55°    | 1528.9 | 1295.6 | 972.4  | 793.0  | 736.2  |
| 57.5°  | 1406.4 | 1167.0 | 855.9  | 688.3  | 640.3  |
| 60°    | 1280.6 | 1041.3 | 733.0  | 580.6  | 532.7  |
| 62.5°  | 1158.1 | 918.7  | 628.3  | 484.8  | 461.0  |
| 65°    | 1032.4 | 789.8  | 520.6  | 419.1  | 409.8  |
| 67.5°  | 912.7  | 670.2  | 419.1  | 367.9  | 359.1  |
| 70°    | 787.0  | 553.7  | 347.0  | 317.1  | 305.1  |
| 72.5°  | 667.3  | 445.7  | 290.2  | 266.4  | 260.3  |
| 75°    | 550.5  | 341.0  | 239.4  | 218.4  | 215.6  |
| 77.5°  | 434.0  | 242.2  | 188.6  | 176.5  | 170.5  |
| 80°    | 326.0  | 173.7  | 143.5  | 131.7  | 131.7  |
| 82.5°  | 227.3  | 116.8  | 98.7   | 92.7   | 92.7   |
| 85°    | 128.6  | 65.7   | 56.8   | 56.8   | 56.8   |
| 87.5°  | 47.9   | 23.8   | 23.8   | 21.0   | 21.0   |
| 90°    | 0.9    | 11.7   | 19.5   | 24.5   | 26.3   |
| 92.5°  | 24.5   | 20.5   | 23.4   | 25.4   | 26.3   |
| 95°    | 63.4   | 31.2   | 38.0   | 43.0   | 42.0   |
| 97.5°  | 114.3  | 34.2   | 49.8   | 52.8   | 53.7   |
| 100°   | 172.9  | 39.1   | 55.7   | 63.4   | 65.4   |
| 102.5° | 237.3  | 235.5  | 57.6   | 68.3   | 71.3   |
| 105°   | 296.9  | 326.3  | 59.6   | 70.3   | 74.2   |
| 107.5° | 366.3  | 390.7  | 61.6   | 72.3   | 76.2   |
| 110°   | 432.8  | 453.2  | 171.0  | 73.3   | 77.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 495.3  | 512.8  | 496.2  | 75.2   | 78.2   |
| 115°   | 561.6  | 578.2  | 602.7  | 150.4  | 80.2   |
| 117.5° | 619.3  | 638.8  | 655.5  | 515.7  | 259.8  |
| 120°   | 683.8  | 698.4  | 716.0  | 727.8  | 595.9  |
| 122.5° | 738.4  | 754.1  | 773.7  | 779.5  | 780.5  |
| 125°   | 794.1  | 806.9  | 825.4  | 832.3  | 835.2  |
| 127.5° | 844.9  | 858.6  | 873.3  | 883.1  | 884.0  |
| 130°   | 892.8  | 908.5  | 919.1  | 929.9  | 929.0  |
| 132.5° | 941.6  | 954.4  | 965.1  | 973.9  | 973.0  |
| 135°   | 982.7  | 998.4  | 1007.1 | 1016.9 | 1015.0 |
| 137.5° | 1025.6 | 1037.3 | 1047.2 | 1056.9 | 1054.0 |
| 140°   | 1067.6 | 1075.5 | 1086.2 | 1095.0 | 1090.1 |
| 142.5° | 1102.9 | 1109.7 | 1122.4 | 1130.1 | 1125.3 |
| 145°   | 1140.0 | 1139.0 | 1155.5 | 1162.4 | 1157.5 |
| 147.5° | 1172.1 | 1169.2 | 1185.8 | 1190.7 | 1186.9 |
| 150°   | 1203.4 | 1196.6 | 1212.3 | 1218.1 | 1213.2 |
| 152.5° | 1229.8 | 1222.0 | 1236.6 | 1242.5 | 1235.7 |
| 155°   | 1255.2 | 1246.5 | 1258.2 | 1264.0 | 1256.2 |
| 157.5° | 1275.7 | 1267.9 | 1276.8 | 1283.6 | 1275.7 |
| 160°   | 1293.3 | 1287.4 | 1293.3 | 1299.1 | 1292.3 |
| 162.5° | 1308.9 | 1303.1 | 1308.0 | 1314.8 | 1306.0 |
| 165°   | 1322.6 | 1316.8 | 1319.7 | 1326.5 | 1319.7 |
| 167.5° | 1333.4 | 1327.4 | 1330.5 | 1337.3 | 1328.5 |
| 170°   | 1342.2 | 1336.3 | 1338.2 | 1345.1 | 1336.3 |
| 172.5° | 1348.0 | 1342.2 | 1344.2 | 1351.0 | 1342.2 |
| 175°   | 1352.8 | 1346.0 | 1348.0 | 1354.8 | 1345.1 |
| 177.5° | 1354.8 | 1348.0 | 1349.0 | 1355.9 | 1347.1 |
| 180°   | 1350.0 | 1350.0 | 1350.0 | 1350.0 | 1350.0 |

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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 | 15.08            | 16.03 | 15.92 | 16.89 | 17.96 | 11.04          | 11.99 | 11.88 | 12.85 | 13.92 |
|                 | 3H   | 16.74            | 17.59 | 17.60 | 18.46 | 19.56 | 12.22          | 13.07 | 13.07 | 13.94 | 15.04 |
|                 | 4H   | 17.35            | 18.15 | 18.22 | 19.02 | 20.13 | 12.66          | 13.46 | 13.53 | 14.34 | 15.45 |
|                 | 6H   | 17.76            | 18.50 | 18.64 | 19.38 | 20.50 | 12.97          | 13.71 | 13.85 | 14.59 | 15.72 |
|                 | 8H   | 17.88            | 18.58 | 18.77 | 19.48 | 20.60 | 13.06          | 13.76 | 13.95 | 14.66 | 15.78 |
|                 | 12H  | 17.94            | 18.61 | 18.83 | 19.50 | 20.65 | 13.10          | 13.76 | 13.99 | 14.66 | 15.81 |
| 4H              | 2H   | 15.11            | 15.91 | 15.98 | 16.78 | 17.89 | 11.64          | 12.44 | 12.51 | 13.31 | 14.43 |
|                 | 3H   | 16.92            | 17.59 | 17.81 | 18.50 | 19.62 | 12.98          | 13.64 | 13.86 | 14.55 | 15.68 |
|                 | 4H   | 17.60            | 18.21 | 18.50 | 19.11 | 20.27 | 13.51          | 14.12 | 14.41 | 15.02 | 16.18 |
|                 | 6H   | 18.11            | 18.63 | 19.02 | 19.56 | 20.71 | 13.92          | 14.44 | 14.83 | 15.37 | 16.52 |
|                 | 8H   | 18.27            | 18.76 | 19.19 | 19.68 | 20.85 | 14.04          | 14.53 | 14.96 | 15.45 | 16.62 |
|                 | 12H  | 18.36            | 18.80 | 19.30 | 19.74 | 20.91 | 14.10          | 14.54 | 15.04 | 15.48 | 16.65 |
| 8H              | 4H   | 17.58            | 18.06 | 18.49 | 18.99 | 20.15 | 13.79          | 14.28 | 14.71 | 15.20 | 16.37 |
|                 | 6H   | 18.13            | 18.53 | 19.07 | 19.49 | 20.66 | 14.29          | 14.69 | 15.23 | 15.66 | 16.82 |
|                 | 8H   | 18.33            | 18.69 | 19.28 | 19.64 | 20.82 | 14.47          | 14.82 | 15.42 | 15.78 | 16.96 |
|                 | 12H  | 18.46            | 18.77 | 19.41 | 19.72 | 20.95 | 14.58          | 14.89 | 15.53 | 15.84 | 17.07 |
| 12H             | 4H   | 17.53            | 17.97 | 18.47 | 18.91 | 20.08 | 13.80          | 14.24 | 14.73 | 15.18 | 16.35 |
|                 | 6H   | 18.10            | 18.46 | 19.05 | 19.41 | 20.59 | 14.33          | 14.69 | 15.29 | 15.65 | 16.83 |
|                 | 8H   | 18.31            | 18.63 | 19.27 | 19.57 | 20.81 | 14.53          | 14.85 | 15.49 | 15.79 | 17.03 |