

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: P919943

Luminaire Tested: DFN2DIP-SQ2F0-070D050US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919943  
REPORT IS A COMBINATION OF REPORTS P901324 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-070D050US935-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

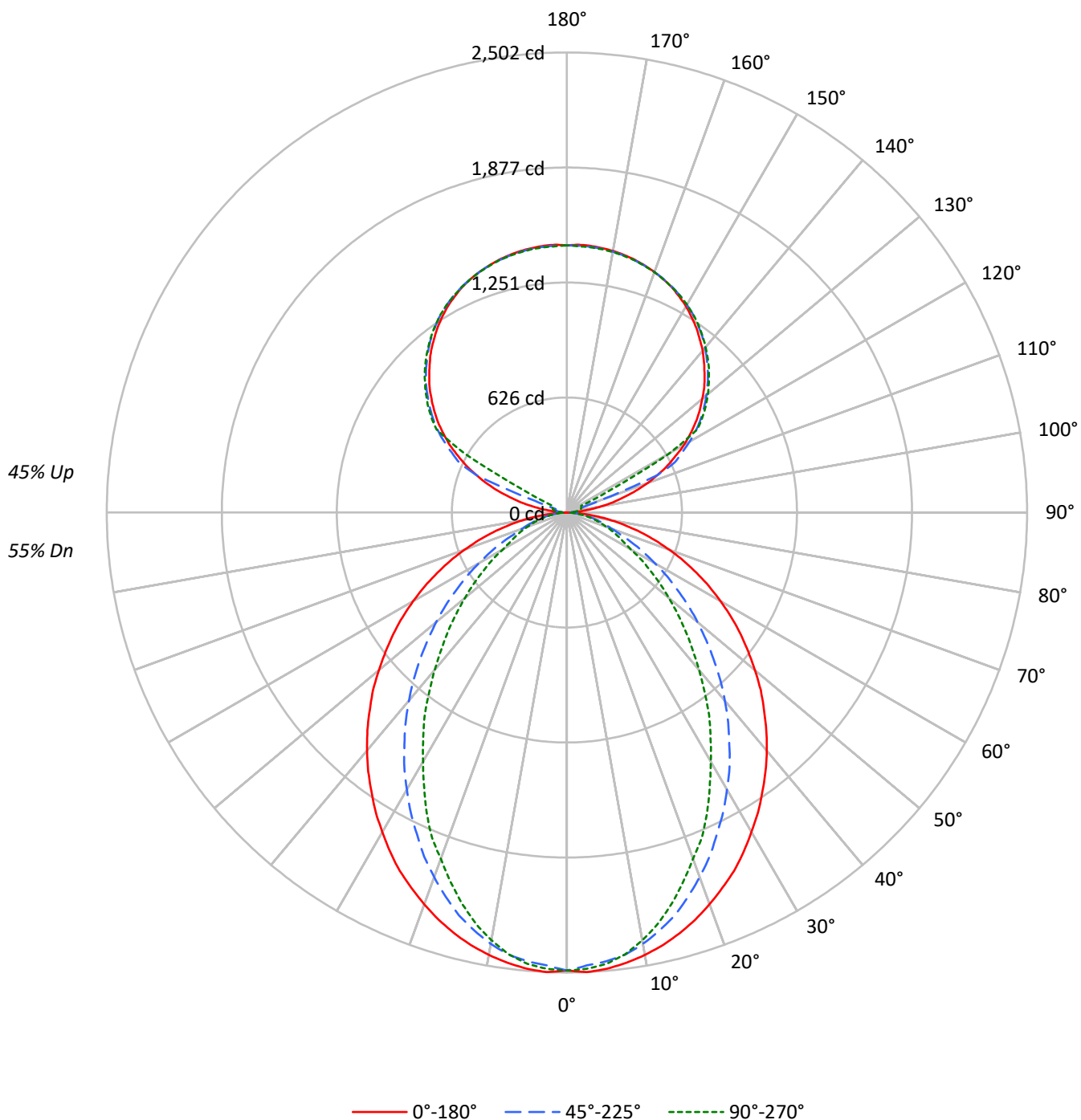
Lumens per Lamp: N/A  
Luminaire Lumens: 9384.9 lumens  
Efficiency: N/A  
Efficacy: 89.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 105.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 54 | 53 | 52 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 67 | 63 | 60 | 57 | 55 | 52 | 48 | 46 | 45 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 51 | 48 | 45 | 43 | 41 | 39 |
| 4   | 76  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 48 | 44 | 46 | 42 | 39 | 39 | 36 | 34 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 38 | 42 | 37 | 34 | 35 | 32 | 30 |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 26 | 24 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 32 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 28  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5477 | 5477 | 5477 |
| 5°  | 5477 | 5378 | 5417 |
| 10° | 5413 | 5261 | 5233 |
| 15° | 5329 | 5076 | 4954 |
| 20° | 5221 | 4825 | 4613 |
| 25° | 5110 | 4546 | 4285 |
| 30° | 4965 | 4261 | 3871 |
| 35° | 4822 | 3956 | 3507 |
| 40° | 4676 | 3642 | 3092 |
| 45° | 4507 | 3295 | 2716 |
| 50° | 4332 | 2945 | 2349 |
| 55° | 4148 | 2573 | 1998 |
| 60° | 3935 | 2186 | 1637 |
| 65° | 3689 | 1795 | 1465 |
| 70° | 3391 | 1430 | 1314 |
| 75° | 3015 | 1237 | 1181 |
| 80° | 2475 | 1005 | 1001 |
| 85° | 1612 | 624  | 712  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4507 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 233.5  | 2.5       |
| 10°-20°   | 640.9  | 6.8       |
| 20°-30°   | 899.8  | 9.6       |
| 30°-40°   | 980.8  | 10.5      |
| 40°-50°   | 901.5  | 9.6       |
| 50°-60°   | 708.0  | 7.5       |
| 60°-70°   | 460.8  | 4.9       |
| 70°-80°   | 237.2  | 2.5       |
| 80°-90°   | 63.1   | 0.7       |
| 90°-100°  | 47.9   | 0.5       |
| 100°-110° | 178.6  | 1.9       |
| 110°-120° | 473.7  | 5.0       |
| 120°-130° | 785.6  | 8.4       |
| 130°-140° | 834.5  | 8.9       |
| 140°-150° | 775.6  | 8.3       |
| 150°-160° | 623.5  | 6.6       |
| 160°-170° | 401.8  | 4.3       |
| 170°-180° | 138.3  | 1.5       |
| 0°-30°    | 1774.1 | 18.9      |
| 0°-40°    | 2754.9 | 29.4      |
| 0°-60°    | 4364.3 | 46.5      |
| 0°-90°    | 5125.5 | 54.6      |
| 90°-120°  | 700.2  | 7.5       |
| 90°-150°  | 3095.8 | 33.0      |
| 90°-180°  | 4259.0 | 45.4      |
| 0°-180°   | 9384.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2491 | 2491  | 2491 | 2491  | 2491 |      |
| 5°   | 2491 | 2480  | 2450 | 2471  | 2464 | 236  |
| 15°  | 2369 | 2344  | 2268 | 2225  | 2202 | 668  |
| 25°  | 2151 | 2078  | 1930 | 1837  | 1803 | 989  |
| 35°  | 1853 | 1738  | 1540 | 1398  | 1348 | 1160 |
| 45°  | 1515 | 1364  | 1127 | 967   | 913  | 1170 |
| 55°  | 1152 | 976   | 732  | 597   | 555  | 1029 |
| 65°  | 778  | 595   | 392  | 316   | 309  | 771  |
| 75°  | 415  | 257   | 180  | 164   | 162  | 439  |
| 85°  | 97   | 50    | 43   | 43    | 43   | 111  |
| 90°  | 1    | 13    | 21   | 26    | 28   | 9    |
| 95°  | 68   | 34    | 41   | 46    | 45   | 81   |
| 105° | 320  | 351   | 64   | 76    | 80   | 342  |
| 115° | 604  | 622   | 649  | 162   | 86   | 595  |
| 125° | 855  | 868   | 888  | 896   | 899  | 762  |
| 135° | 1058 | 1074  | 1084 | 1094  | 1092 | 817  |
| 145° | 1227 | 1226  | 1244 | 1251  | 1246 | 767  |
| 155° | 1351 | 1342  | 1354 | 1360  | 1352 | 622  |
| 165° | 1423 | 1417  | 1420 | 1428  | 1420 | 402  |
| 175° | 1456 | 1449  | 1451 | 1458  | 1448 | 139  |
| 180° | 1453 | 1453  | 1453 | 1453  | 1453 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2491.0 | 2491.0 | 2491.0 | 2491.0 | 2491.0 |
| 2.5°   | 2502.1 | 2491.0 | 2466.1 | 2488.8 | 2484.2 |
| 5°     | 2491.0 | 2479.7 | 2450.3 | 2470.6 | 2463.9 |
| 7.5°   | 2470.6 | 2457.2 | 2425.7 | 2434.5 | 2423.3 |
| 10°    | 2443.6 | 2427.8 | 2382.8 | 2375.9 | 2362.5 |
| 12.5°  | 2409.8 | 2389.5 | 2328.6 | 2315.1 | 2290.3 |
| 15°    | 2369.2 | 2344.3 | 2267.8 | 2225.0 | 2202.5 |
| 17.5°  | 2321.9 | 2285.8 | 2191.1 | 2141.5 | 2105.4 |
| 20°    | 2267.8 | 2222.6 | 2110.0 | 2053.7 | 2004.0 |
| 22.5°  | 2209.2 | 2157.3 | 2026.4 | 1949.9 | 1916.2 |
| 25°    | 2150.6 | 2078.4 | 1929.6 | 1837.3 | 1803.4 |
| 27.5°  | 2080.8 | 2004.0 | 1839.4 | 1733.5 | 1681.6 |
| 30°    | 2006.4 | 1920.5 | 1740.2 | 1625.4 | 1564.4 |
| 32.5°  | 1934.1 | 1830.4 | 1645.7 | 1510.4 | 1453.9 |
| 35°    | 1853.0 | 1738.0 | 1539.8 | 1397.7 | 1348.0 |
| 37.5°  | 1774.2 | 1650.0 | 1440.5 | 1284.8 | 1228.6 |
| 40°    | 1690.7 | 1555.6 | 1336.7 | 1176.7 | 1118.1 |
| 42.5°  | 1605.1 | 1460.9 | 1233.1 | 1066.2 | 1010.0 |
| 45°    | 1514.9 | 1363.7 | 1127.2 | 967.0  | 912.9  |
| 47.5°  | 1429.3 | 1269.3 | 1025.8 | 865.6  | 816.1  |
| 50°    | 1334.5 | 1174.6 | 926.5  | 770.9  | 723.8  |
| 52.5°  | 1242.0 | 1072.9 | 831.8  | 683.0  | 640.2  |
| 55°    | 1151.8 | 976.0  | 732.5  | 597.4  | 554.7  |
| 57.5°  | 1059.5 | 879.2  | 644.8  | 518.5  | 482.4  |
| 60°    | 964.8  | 784.5  | 552.2  | 437.5  | 401.3  |
| 62.5°  | 872.4  | 692.2  | 473.3  | 365.2  | 347.2  |
| 65°    | 777.7  | 595.0  | 392.3  | 315.7  | 308.8  |
| 67.5°  | 687.6  | 504.9  | 315.7  | 277.2  | 270.5  |
| 70°    | 592.9  | 417.1  | 261.4  | 238.9  | 229.8  |
| 72.5°  | 502.7  | 335.8  | 218.6  | 200.7  | 196.1  |
| 75°    | 414.7  | 256.8  | 180.3  | 164.5  | 162.4  |
| 77.5°  | 326.9  | 182.4  | 142.1  | 132.9  | 128.5  |
| 80°    | 245.6  | 130.8  | 108.1  | 99.3   | 99.3   |
| 82.5°  | 171.3  | 88.0   | 74.4   | 69.8   | 69.8   |
| 85°    | 96.9   | 49.5   | 42.8   | 42.8   | 42.8   |
| 87.5°  | 36.1   | 17.9   | 17.9   | 15.8   | 15.8   |
| 90°    | 1.0    | 12.6   | 21.0   | 26.3   | 28.3   |
| 92.5°  | 26.3   | 22.1   | 25.2   | 27.4   | 28.3   |
| 95°    | 68.3   | 33.6   | 41.0   | 46.3   | 45.2   |
| 97.5°  | 123.0  | 36.9   | 53.6   | 56.8   | 57.8   |
| 100°   | 186.1  | 42.1   | 59.9   | 68.3   | 70.4   |
| 102.5° | 255.5  | 253.4  | 62.1   | 73.5   | 76.8   |
| 105°   | 319.6  | 351.2  | 64.1   | 75.7   | 79.9   |
| 107.5° | 394.3  | 420.4  | 66.3   | 77.7   | 82.1   |
| 110°   | 465.8  | 487.8  | 184.0  | 78.9   | 83.0   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 533.0  | 551.9  | 534.1  | 80.9   | 84.1   |
| 115°   | 604.5  | 622.3  | 648.7  | 162.0  | 86.3   |
| 117.5° | 666.5  | 687.5  | 705.5  | 555.0  | 279.7  |
| 120°   | 735.9  | 751.7  | 770.6  | 783.2  | 641.3  |
| 122.5° | 794.7  | 811.6  | 832.7  | 839.0  | 840.1  |
| 125°   | 854.6  | 868.4  | 888.4  | 895.7  | 898.9  |
| 127.5° | 909.3  | 924.0  | 940.0  | 950.4  | 951.4  |
| 130°   | 960.9  | 977.7  | 989.2  | 1000.8 | 999.9  |
| 132.5° | 1013.5 | 1027.2 | 1038.6 | 1048.2 | 1047.1 |
| 135°   | 1057.6 | 1074.5 | 1083.8 | 1094.5 | 1092.3 |
| 137.5° | 1103.8 | 1116.5 | 1127.0 | 1137.6 | 1134.5 |
| 140°   | 1149.0 | 1157.5 | 1169.0 | 1178.4 | 1173.3 |
| 142.5° | 1187.0 | 1194.4 | 1208.0 | 1216.3 | 1211.1 |
| 145°   | 1226.9 | 1225.8 | 1243.6 | 1251.0 | 1245.8 |
| 147.5° | 1261.5 | 1258.3 | 1276.3 | 1281.5 | 1277.4 |
| 150°   | 1295.2 | 1287.9 | 1304.7 | 1311.0 | 1305.7 |
| 152.5° | 1323.5 | 1315.2 | 1330.9 | 1337.3 | 1329.9 |
| 155°   | 1350.9 | 1341.5 | 1354.1 | 1360.4 | 1352.0 |
| 157.5° | 1372.9 | 1364.6 | 1374.1 | 1381.5 | 1372.9 |
| 160°   | 1392.0 | 1385.6 | 1392.0 | 1398.2 | 1390.9 |
| 162.5° | 1408.7 | 1402.5 | 1407.6 | 1415.0 | 1405.6 |
| 165°   | 1423.4 | 1417.2 | 1420.3 | 1427.6 | 1420.3 |
| 167.5° | 1435.0 | 1428.7 | 1431.9 | 1439.2 | 1429.8 |
| 170°   | 1444.5 | 1438.1 | 1440.3 | 1447.6 | 1438.1 |
| 172.5° | 1450.8 | 1444.5 | 1446.6 | 1454.0 | 1444.5 |
| 175°   | 1456.0 | 1448.6 | 1450.8 | 1458.1 | 1447.6 |
| 177.5° | 1458.1 | 1450.8 | 1451.9 | 1459.2 | 1449.7 |
| 180°   | 1452.8 | 1452.8 | 1452.8 | 1452.8 | 1452.8 |

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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 | 13.36            | 14.23 | 14.29 | 15.17 | 16.37 | 9.32           | 10.19 | 10.25 | 11.13 | 12.33 |
|                 | 3H   | 15.02            | 15.80 | 15.96 | 16.75 | 17.98 | 10.50          | 11.27 | 11.43 | 12.22 | 13.45 |
|                 | 4H   | 15.62            | 16.35 | 16.57 | 17.30 | 18.54 | 10.93          | 11.67 | 11.88 | 12.62 | 13.86 |
|                 | 6H   | 16.03            | 16.70 | 16.99 | 17.66 | 18.91 | 11.24          | 11.92 | 12.20 | 12.87 | 14.13 |
|                 | 8H   | 16.15            | 16.79 | 17.11 | 17.76 | 19.01 | 11.32          | 11.97 | 12.29 | 12.94 | 14.19 |
|                 | 12H  | 16.20            | 16.81 | 17.17 | 17.78 | 19.05 | 11.36          | 11.97 | 12.33 | 12.94 | 14.21 |
| 4H              | 2H   | 13.38            | 14.11 | 14.34 | 15.06 | 16.30 | 9.91           | 10.65 | 10.87 | 11.60 | 12.84 |
|                 | 3H   | 15.19            | 15.80 | 16.16 | 16.78 | 18.03 | 11.24          | 11.85 | 12.21 | 12.84 | 14.09 |
|                 | 4H   | 15.87            | 16.42 | 16.84 | 17.40 | 18.68 | 11.78          | 12.33 | 12.75 | 13.31 | 14.59 |
|                 | 6H   | 16.37            | 16.85 | 17.35 | 17.84 | 19.12 | 12.18          | 12.66 | 13.17 | 13.66 | 14.93 |
|                 | 8H   | 16.53            | 16.98 | 17.52 | 17.97 | 19.26 | 12.30          | 12.75 | 13.29 | 13.74 | 15.03 |
|                 | 12H  | 16.62            | 17.02 | 17.62 | 18.03 | 19.32 | 12.36          | 12.76 | 13.36 | 13.77 | 15.06 |
| 8H              | 4H   | 15.83            | 16.28 | 16.82 | 17.27 | 18.56 | 12.05          | 12.50 | 13.04 | 13.49 | 14.78 |
|                 | 6H   | 16.38            | 16.75 | 17.39 | 17.78 | 19.07 | 12.55          | 12.91 | 13.56 | 13.95 | 15.24 |
|                 | 8H   | 16.58            | 16.91 | 17.61 | 17.93 | 19.24 | 12.72          | 13.05 | 13.74 | 14.07 | 15.38 |
|                 | 12H  | 16.71            | 17.00 | 17.73 | 18.01 | 19.36 | 12.83          | 13.11 | 13.85 | 14.13 | 15.48 |
| 12H             | 4H   | 15.79            | 16.19 | 16.79 | 17.20 | 18.49 | 12.05          | 12.46 | 13.06 | 13.46 | 14.76 |
|                 | 6H   | 16.35            | 16.68 | 17.38 | 17.70 | 19.01 | 12.59          | 12.91 | 13.61 | 13.94 | 15.24 |
|                 | 8H   | 16.56            | 16.85 | 17.59 | 17.86 | 19.22 | 12.79          | 13.07 | 13.81 | 14.09 | 15.44 |