

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: P919954

Luminaire Tested: DFN2DIP-SQ2F0-070D080US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919954  
REPORT IS A COMBINATION OF REPORTS P899840 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-070D080US935-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

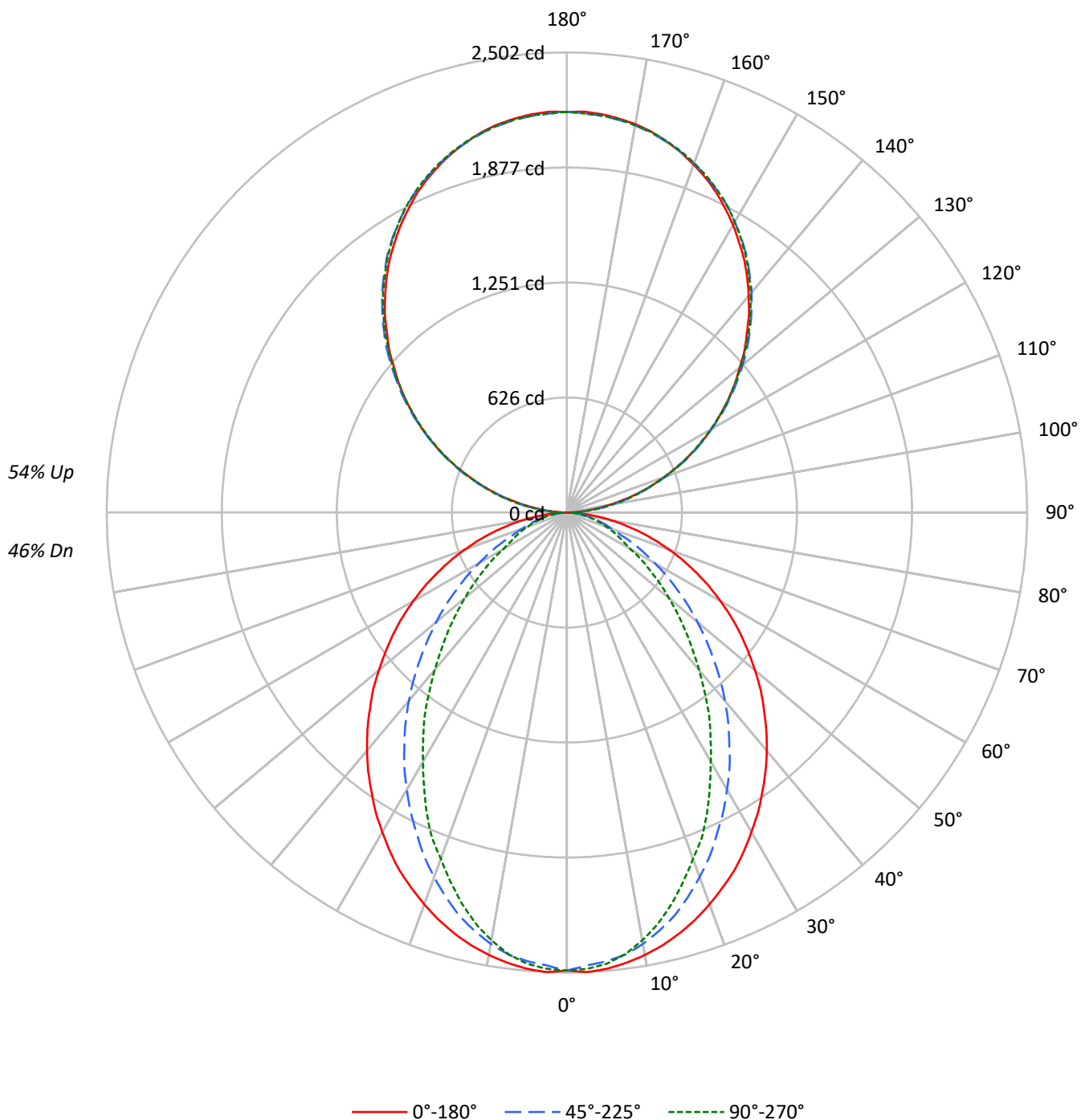
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11218.8 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: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 132.7  
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



TEST NUMBER: P919954

CATALOG NUMBER: DFN2DIP-SQ2F0-070D080US935-RLFL

**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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 66 | 66 | 66 | 52 | 52 | 52 |
| 1   | 97  | 93  | 89  | 86  | 89 | 86 | 82 | 80 | 72 | 69 | 67 | 59 | 57 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 81 | 75 | 70 | 66 | 63 | 60 | 56 | 52 | 49 | 47 | 42 | 40 | 38 |
| 3   | 81  | 72  | 65  | 60  | 74 | 67 | 61 | 56 | 56 | 52 | 48 | 46 | 43 | 40 | 37 | 35 | 33 |
| 4   | 75  | 64  | 57  | 51  | 68 | 59 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 57  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 43 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 20 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 18 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 26 | 22 | 20 | 22 | 19 | 17 |
| 10  | 47  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 24 | 20 | 18 | 20 | 17 | 15 |

**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   | 2.1       |
| 10°-20°   | 640.9   | 5.7       |
| 20°-30°   | 899.8   | 8.0       |
| 30°-40°   | 980.8   | 8.7       |
| 40°-50°   | 901.5   | 8.0       |
| 50°-60°   | 708.0   | 6.3       |
| 60°-70°   | 460.8   | 4.1       |
| 70°-80°   | 237.2   | 2.1       |
| 80°-90°   | 66.7    | 0.6       |
| 90°-100°  | 134.8   | 1.2       |
| 100°-110° | 428.3   | 3.8       |
| 110°-120° | 733.0   | 6.5       |
| 120°-130° | 964.0   | 8.6       |
| 130°-140° | 1082.0  | 9.6       |
| 140°-150° | 1061.0  | 9.5       |
| 150°-160° | 890.1   | 7.9       |
| 160°-170° | 590.3   | 5.3       |
| 170°-180° | 206.3   | 1.8       |
| 0°-30°    | 1774.1  | 15.8      |
| 0°-40°    | 2754.9  | 24.6      |
| 0°-60°    | 4364.3  | 38.9      |
| 0°-90°    | 5129.1  | 45.7      |
| 90°-120°  | 1296.1  | 11.6      |
| 90°-150°  | 4403.1  | 39.2      |
| 90°-180°  | 6090.0  | 54.3      |
| 0°-180°   | 11218.8 | 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°  | 2    | 24    | 64   | 60    | 62   | 11   |
| 95°  | 96   | 114   | 118  | 118   | 114  | 107  |
| 105° | 395  | 401   | 405  | 408   | 408  | 417  |
| 115° | 736  | 746   | 743  | 741   | 736  | 728  |
| 125° | 1070 | 1086  | 1081 | 1075  | 1073 | 956  |
| 135° | 1384 | 1404  | 1408 | 1406  | 1401 | 1070 |
| 145° | 1680 | 1693  | 1704 | 1706  | 1698 | 1050 |
| 155° | 1921 | 1926  | 1932 | 1941  | 1935 | 884  |
| 165° | 2090 | 2088  | 2088 | 2101  | 2092 | 590  |
| 175° | 2174 | 2169  | 2165 | 2178  | 2167 | 207  |
| 180° | 2178 | 2178  | 2178 | 2178  | 2178 |      |

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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°    | 2.0    | 23.7   | 64.4   | 60.4   | 62.4   |
| 92.5°  | 40.7   | 55.2   | 57.2   | 59.1   | 59.1   |
| 95°    | 95.9   | 114.3  | 117.5  | 117.5  | 114.3  |
| 97.5°  | 159.6  | 176.7  | 183.9  | 183.9  | 183.9  |
| 100°   | 233.2  | 248.2  | 253.5  | 253.5  | 251.5  |
| 102.5° | 310.6  | 321.8  | 329.0  | 331.0  | 329.0  |
| 105°   | 395.4  | 400.6  | 404.6  | 407.9  | 407.9  |
| 107.5° | 479.4  | 487.3  | 487.3  | 488.6  | 479.4  |
| 110°   | 560.9  | 571.4  | 571.4  | 571.4  | 566.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 648.8  | 660.0  | 658.1  | 652.8  | 648.8  |
| 115°   | 735.6  | 746.1  | 742.8  | 740.8  | 735.6  |
| 117.5° | 821.6  | 836.0  | 826.8  | 821.6  | 816.3  |
| 120°   | 908.3  | 922.7  | 908.3  | 908.3  | 902.3  |
| 122.5° | 987.0  | 1005.5 | 996.3  | 991.0  | 987.0  |
| 125°   | 1069.8 | 1086.2 | 1081.0 | 1075.0 | 1073.1 |
| 127.5° | 1150.6 | 1171.0 | 1163.7 | 1155.9 | 1150.6 |
| 130°   | 1226.1 | 1249.7 | 1246.5 | 1242.6 | 1235.4 |
| 132.5° | 1310.9 | 1329.2 | 1330.6 | 1321.4 | 1316.1 |
| 135°   | 1383.7 | 1404.1 | 1408.1 | 1406.1 | 1400.8 |
| 137.5° | 1465.2 | 1481.6 | 1484.9 | 1483.6 | 1475.7 |
| 140°   | 1536.8 | 1553.2 | 1562.4 | 1562.4 | 1555.1 |
| 142.5° | 1610.3 | 1626.8 | 1632.0 | 1634.0 | 1626.8 |
| 145°   | 1680.0 | 1693.1 | 1703.6 | 1705.6 | 1698.3 |
| 147.5° | 1742.3 | 1758.8 | 1766.6 | 1770.0 | 1762.7 |
| 150°   | 1806.7 | 1817.8 | 1825.1 | 1831.0 | 1825.1 |
| 152.5° | 1863.8 | 1875.0 | 1884.2 | 1891.4 | 1884.2 |
| 155°   | 1921.0 | 1926.2 | 1932.2 | 1941.3 | 1935.4 |
| 157.5° | 1970.2 | 1974.2 | 1977.5 | 1990.5 | 1981.4 |
| 160°   | 2014.2 | 2018.2 | 2020.2 | 2031.3 | 2023.4 |
| 162.5° | 2054.9 | 2054.9 | 2056.9 | 2069.4 | 2060.2 |
| 165°   | 2089.7 | 2087.7 | 2087.7 | 2100.9 | 2091.7 |
| 167.5° | 2121.2 | 2115.4 | 2115.4 | 2128.5 | 2119.3 |
| 170°   | 2144.9 | 2139.7 | 2137.7 | 2150.9 | 2139.7 |
| 172.5° | 2161.4 | 2156.1 | 2154.1 | 2167.2 | 2156.1 |
| 175°   | 2174.5 | 2169.2 | 2165.2 | 2178.4 | 2167.2 |
| 177.5° | 2181.7 | 2176.4 | 2172.5 | 2183.7 | 2172.5 |
| 180°   | 2178.4 | 2178.4 | 2178.4 | 2178.4 | 2178.4 |

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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 | 12.52            | 13.32 | 13.52 | 14.33 | 15.66 | 8.49           | 9.28  | 9.48  | 10.29 | 11.62 |
|                 | 3H   | 14.18            | 14.89 | 15.19 | 15.91 | 17.26 | 9.65           | 10.37 | 10.66 | 11.38 | 12.74 |
|                 | 4H   | 14.77            | 15.45 | 15.80 | 16.47 | 17.83 | 10.09          | 10.76 | 11.11 | 11.78 | 13.14 |
|                 | 6H   | 15.18            | 15.80 | 16.21 | 16.82 | 18.20 | 10.39          | 11.01 | 11.43 | 12.04 | 13.41 |
|                 | 8H   | 15.30            | 15.88 | 16.33 | 16.92 | 18.29 | 10.47          | 11.06 | 11.51 | 12.10 | 13.47 |
|                 | 12H  | 15.35            | 15.91 | 16.39 | 16.94 | 18.33 | 10.51          | 11.07 | 11.55 | 12.10 | 13.49 |
| 4H              | 2H   | 12.53            | 13.21 | 13.56 | 14.23 | 15.59 | 9.07           | 9.74  | 10.10 | 10.76 | 12.12 |
|                 | 3H   | 14.34            | 14.90 | 15.38 | 15.94 | 17.32 | 10.39          | 10.95 | 11.43 | 12.00 | 13.37 |
|                 | 4H   | 15.01            | 15.53 | 16.06 | 16.56 | 17.96 | 10.92          | 11.44 | 11.97 | 12.47 | 13.87 |
|                 | 6H   | 15.51            | 15.95 | 16.56 | 17.01 | 18.40 | 11.32          | 11.76 | 12.38 | 12.82 | 14.22 |
|                 | 8H   | 15.67            | 16.08 | 16.73 | 17.14 | 18.54 | 11.44          | 11.85 | 12.49 | 12.90 | 14.31 |
|                 | 12H  | 15.75            | 16.12 | 16.83 | 17.19 | 18.61 | 11.49          | 11.86 | 12.56 | 12.93 | 14.34 |
| 8H              | 4H   | 14.97            | 15.38 | 16.03 | 16.44 | 17.85 | 11.19          | 11.60 | 12.24 | 12.65 | 14.06 |
|                 | 6H   | 15.52            | 15.86 | 16.59 | 16.95 | 18.36 | 11.68          | 12.02 | 12.76 | 13.12 | 14.52 |
|                 | 8H   | 15.72            | 16.02 | 16.81 | 17.10 | 18.52 | 11.86          | 12.16 | 12.94 | 13.24 | 14.66 |
|                 | 12H  | 15.84            | 16.11 | 16.93 | 17.18 | 18.65 | 11.96          | 12.22 | 13.05 | 13.30 | 14.76 |
| 12H             | 4H   | 14.92            | 15.29 | 16.00 | 16.36 | 17.78 | 11.19          | 11.56 | 12.26 | 12.63 | 14.04 |
|                 | 6H   | 15.49            | 15.79 | 16.58 | 16.87 | 18.29 | 11.73          | 12.02 | 12.81 | 13.10 | 14.53 |
|                 | 8H   | 15.70            | 15.96 | 16.78 | 17.03 | 18.50 | 11.92          | 12.18 | 13.01 | 13.26 | 14.72 |