

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: P920136

Luminaire Tested: DFN2DIP-SQ3F0-080D070US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920136  
REPORT IS A COMBINATION OF REPORTS P899923 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-080D070US935-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

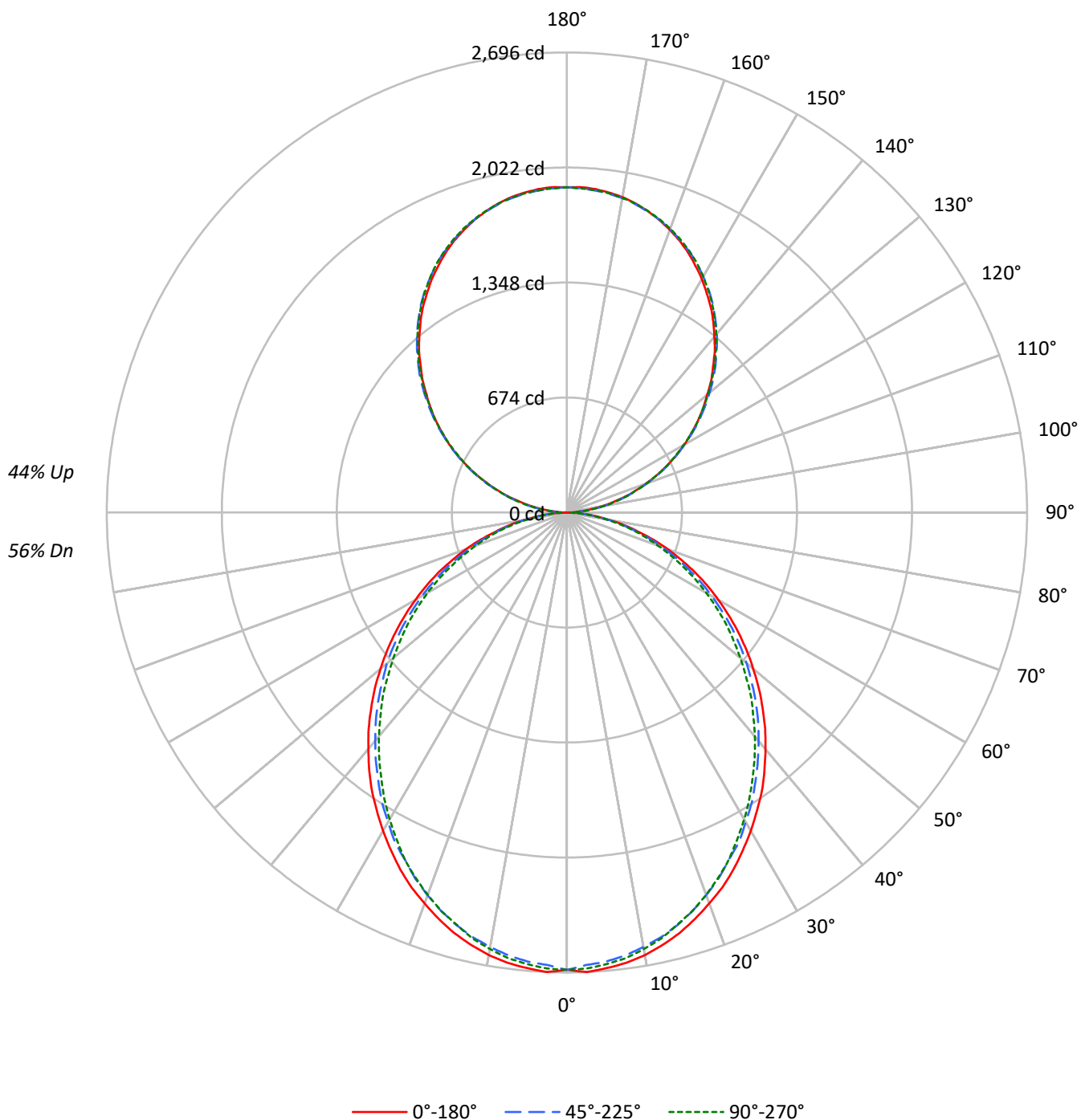
Lumens per Lamp: N/A  
Luminaire Lumens: 12153.0 lumens  
Efficiency: N/A  
Efficacy: 94.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 128.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ3F0-080D070US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P920136

CATALOG NUMBER: DFN2DIP-SQ3F0-080D070US935-FLLFL

**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   | 99  | 95  | 91  | 87  |  | 92  | 88  | 85  | 82  |  | 76 | 74 | 71 |  | 65 | 63 | 61 |  | 55 | 53 | 52 |
| 2   | 90  | 83  | 77  | 71  |  | 84  | 77  | 72  | 67  |  | 67 | 63 | 59 |  | 57 | 54 | 51 |  | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 59  |  | 76  | 68  | 61  | 56  |  | 59 | 54 | 50 |  | 50 | 47 | 43 |  | 43 | 40 | 37 |
| 4   | 75  | 64  | 56  | 50  |  | 70  | 60  | 53  | 48  |  | 52 | 47 | 42 |  | 45 | 41 | 37 |  | 38 | 35 | 32 |
| 5   | 69  | 57  | 49  | 43  |  | 64  | 54  | 46  | 41  |  | 47 | 41 | 37 |  | 40 | 36 | 32 |  | 34 | 31 | 28 |
| 6   | 64  | 52  | 43  | 38  |  | 59  | 48  | 41  | 36  |  | 42 | 36 | 32 |  | 37 | 32 | 28 |  | 31 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  |  | 55  | 44  | 37  | 31  |  | 38 | 32 | 28 |  | 33 | 29 | 25 |  | 28 | 25 | 22 |
| 8   | 55  | 42  | 35  | 29  |  | 51  | 40  | 33  | 28  |  | 35 | 29 | 25 |  | 30 | 26 | 22 |  | 26 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  |  | 47  | 36  | 30  | 25  |  | 32 | 26 | 23 |  | 28 | 23 | 20 |  | 24 | 21 | 18 |
| 10  | 48  | 36  | 28  | 23  |  | 44  | 34  | 27  | 22  |  | 30 | 24 | 20 |  | 26 | 21 | 18 |  | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3071 | 3071 | 3071 |
| 5°  | 3074 | 3026 | 3048 |
| 10° | 3047 | 2983 | 3005 |
| 15° | 3000 | 2932 | 2940 |
| 20° | 2938 | 2862 | 2873 |
| 25° | 2876 | 2778 | 2796 |
| 30° | 2798 | 2700 | 2697 |
| 35° | 2724 | 2609 | 2594 |
| 40° | 2634 | 2516 | 2495 |
| 45° | 2544 | 2423 | 2394 |
| 50° | 2445 | 2325 | 2277 |
| 55° | 2342 | 2212 | 2169 |
| 60° | 2225 | 2078 | 2046 |
| 65° | 2097 | 1939 | 1900 |
| 70° | 1934 | 1770 | 1744 |
| 75° | 1708 | 1567 | 1597 |
| 80° | 1436 | 1307 | 1320 |
| 85° | 1011 | 867  | 864  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2544 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 252.3   | 2.1       |
| 10°-20°   | 709.8   | 5.8       |
| 20°-30°   | 1043.1  | 8.6       |
| 30°-40°   | 1211.4  | 10.0      |
| 40°-50°   | 1209.9  | 10.0      |
| 50°-60°   | 1055.0  | 8.7       |
| 60°-70°   | 779.9   | 6.4       |
| 70°-80°   | 441.2   | 3.6       |
| 80°-90°   | 121.9   | 1.0       |
| 90°-100°  | 117.9   | 1.0       |
| 100°-110° | 374.8   | 3.1       |
| 110°-120° | 641.3   | 5.3       |
| 120°-130° | 843.5   | 6.9       |
| 130°-140° | 946.7   | 7.8       |
| 140°-150° | 928.4   | 7.6       |
| 150°-160° | 778.8   | 6.4       |
| 160°-170° | 516.5   | 4.2       |
| 170°-180° | 180.5   | 1.5       |
| 0°-30°    | 2005.1  | 16.5      |
| 0°-40°    | 3216.5  | 26.5      |
| 0°-60°    | 5481.5  | 45.1      |
| 0°-90°    | 6824.5  | 56.2      |
| 90°-120°  | 1134.1  | 9.3       |
| 90°-150°  | 3852.7  | 31.7      |
| 90°-180°  | 5328.0  | 43.8      |
| 0°-180°   | 12153.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2680 | 2680  | 2680 | 2680  | 2680 |      |
| 5°   | 2680 | 2670  | 2642 | 2662  | 2657 | 254  |
| 15°  | 2551 | 2536  | 2502 | 2513  | 2500 | 719  |
| 25°  | 2309 | 2289  | 2245 | 2250  | 2245 | 1063 |
| 35°  | 1992 | 1966  | 1925 | 1910  | 1897 | 1244 |
| 45°  | 1621 | 1603  | 1564 | 1536  | 1526 | 1251 |
| 55°  | 1227 | 1211  | 1180 | 1150  | 1137 | 1097 |
| 65°  | 827  | 812   | 786  | 763   | 750  | 818  |
| 75°  | 433  | 428   | 415  | 400   | 405  | 462  |
| 85°  | 106  | 103   | 101  | 93    | 90   | 118  |
| 90°  | 2    | 21    | 56   | 53    | 55   | 12   |
| 95°  | 84   | 100   | 103  | 103   | 100  | 93   |
| 105° | 346  | 350   | 354  | 357   | 357  | 365  |
| 115° | 644  | 653   | 650  | 648   | 644  | 637  |
| 125° | 936  | 950   | 946  | 941   | 939  | 837  |
| 135° | 1211 | 1229  | 1232 | 1230  | 1226 | 936  |
| 145° | 1470 | 1481  | 1491 | 1492  | 1486 | 918  |
| 155° | 1681 | 1685  | 1691 | 1699  | 1694 | 774  |
| 165° | 1828 | 1827  | 1827 | 1838  | 1830 | 516  |
| 175° | 1903 | 1898  | 1895 | 1906  | 1896 | 181  |
| 180° | 1906 | 1906  | 1906 | 1906  | 1906 |      |

TEST NUMBER: P920136

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2680.1 | 2680.1 | 2680.1 | 2680.1 | 2680.1 |
| 2.5°   | 2695.7 | 2682.9 | 2654.5 | 2680.1 | 2675.2 |
| 5°     | 2680.1 | 2670.0 | 2641.6 | 2662.1 | 2657.2 |
| 7.5°   | 2662.1 | 2646.8 | 2618.4 | 2639.1 | 2634.0 |
| 10°    | 2634.0 | 2615.9 | 2585.0 | 2605.5 | 2597.9 |
| 12.5°  | 2595.1 | 2579.8 | 2548.9 | 2561.7 | 2556.6 |
| 15°    | 2551.4 | 2536.1 | 2502.4 | 2512.8 | 2500.0 |
| 17.5°  | 2497.2 | 2481.9 | 2448.2 | 2461.2 | 2448.2 |
| 20°    | 2437.9 | 2422.6 | 2386.5 | 2394.2 | 2384.0 |
| 22.5°  | 2378.9 | 2355.6 | 2321.9 | 2321.9 | 2316.8 |
| 25°    | 2309.1 | 2288.6 | 2244.9 | 2249.8 | 2244.9 |
| 27.5°  | 2231.7 | 2213.7 | 2180.3 | 2172.6 | 2159.8 |
| 30°    | 2154.6 | 2133.8 | 2095.3 | 2087.7 | 2077.2 |
| 32.5°  | 2072.1 | 2056.8 | 2015.4 | 1999.8 | 1989.5 |
| 35°    | 1992.2 | 1966.5 | 1925.2 | 1909.6 | 1896.8 |
| 37.5°  | 1901.9 | 1878.7 | 1837.5 | 1819.4 | 1806.5 |
| 40°    | 1809.3 | 1788.5 | 1747.2 | 1724.2 | 1713.8 |
| 42.5°  | 1719.1 | 1698.2 | 1657.2 | 1631.2 | 1616.0 |
| 45°    | 1621.2 | 1603.1 | 1564.3 | 1536.1 | 1525.8 |
| 47.5°  | 1525.8 | 1507.7 | 1466.4 | 1438.0 | 1422.6 |
| 50°    | 1425.1 | 1412.3 | 1376.1 | 1340.1 | 1327.2 |
| 52.5°  | 1327.2 | 1309.1 | 1275.8 | 1247.4 | 1229.3 |
| 55°    | 1226.8 | 1211.3 | 1180.4 | 1149.5 | 1136.6 |
| 57.5°  | 1126.3 | 1113.4 | 1079.8 | 1048.9 | 1038.4 |
| 60°    | 1025.6 | 1015.5 | 979.4  | 951.0  | 943.3  |
| 62.5°  | 927.7  | 909.7  | 884.0  | 858.3  | 847.9  |
| 65°    | 827.4  | 811.8  | 786.1  | 762.8  | 750.0  |
| 67.5°  | 724.3  | 711.2  | 688.2  | 670.2  | 659.8  |
| 70°    | 628.9  | 618.5  | 595.3  | 577.2  | 567.1  |
| 72.5°  | 531.0  | 520.6  | 507.7  | 489.7  | 482.1  |
| 75°    | 432.8  | 427.9  | 414.8  | 399.5  | 404.7  |
| 77.5°  | 345.3  | 334.9  | 329.8  | 322.1  | 314.4  |
| 80°    | 257.9  | 255.1  | 249.9  | 242.3  | 237.0  |
| 82.5°  | 175.3  | 175.3  | 172.8  | 162.4  | 162.4  |
| 85°    | 105.6  | 103.1  | 100.7  | 92.7   | 90.2   |
| 87.5°  | 46.5   | 41.3   | 36.1   | 28.4   | 25.7   |
| 90°    | 1.7    | 20.7   | 56.3   | 52.9   | 54.6   |
| 92.5°  | 35.6   | 48.3   | 50.0   | 51.7   | 51.7   |
| 95°    | 83.9   | 100.0  | 102.9  | 102.9  | 100.0  |
| 97.5°  | 139.7  | 154.5  | 160.9  | 160.9  | 160.9  |
| 100°   | 204.0  | 217.2  | 221.8  | 221.8  | 220.1  |
| 102.5° | 271.8  | 281.5  | 287.9  | 289.6  | 287.9  |
| 105°   | 345.9  | 350.5  | 354.0  | 356.9  | 356.9  |
| 107.5° | 419.5  | 426.4  | 426.4  | 427.6  | 419.5  |
| 110°   | 490.8  | 500.0  | 500.0  | 500.0  | 495.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 567.7  | 577.6  | 575.8  | 571.2  | 567.7  |
| 115°   | 643.6  | 652.8  | 650.0  | 648.2  | 643.6  |
| 117.5° | 718.8  | 731.5  | 723.5  | 718.8  | 714.3  |
| 120°   | 794.7  | 807.4  | 794.7  | 794.7  | 789.5  |
| 122.5° | 863.7  | 879.8  | 871.8  | 867.1  | 863.7  |
| 125°   | 936.1  | 950.5  | 945.9  | 940.7  | 939.0  |
| 127.5° | 1006.8 | 1024.6 | 1018.3 | 1011.4 | 1006.8 |
| 130°   | 1072.9 | 1093.6 | 1090.7 | 1087.3 | 1080.9 |
| 132.5° | 1147.0 | 1163.1 | 1164.2 | 1156.2 | 1151.6 |
| 135°   | 1210.8 | 1228.6 | 1232.1 | 1230.3 | 1225.7 |
| 137.5° | 1282.0 | 1296.4 | 1299.2 | 1298.1 | 1291.2 |
| 140°   | 1344.7 | 1359.1 | 1367.1 | 1367.1 | 1360.8 |
| 142.5° | 1409.0 | 1423.4 | 1428.0 | 1429.7 | 1423.4 |
| 145°   | 1470.0 | 1481.4 | 1490.6 | 1492.4 | 1486.1 |
| 147.5° | 1524.6 | 1538.9 | 1545.8 | 1548.7 | 1542.4 |
| 150°   | 1580.9 | 1590.6 | 1597.0 | 1602.1 | 1597.0 |
| 152.5° | 1630.8 | 1640.6 | 1648.6 | 1655.0 | 1648.6 |
| 155°   | 1680.8 | 1685.4 | 1690.7 | 1698.7 | 1693.5 |
| 157.5° | 1724.0 | 1727.4 | 1730.3 | 1741.8 | 1733.7 |
| 160°   | 1762.5 | 1765.9 | 1767.6 | 1777.4 | 1770.5 |
| 162.5° | 1798.1 | 1798.1 | 1799.8 | 1810.7 | 1802.7 |
| 165°   | 1828.5 | 1826.8 | 1826.8 | 1838.3 | 1830.2 |
| 167.5° | 1856.1 | 1851.0 | 1851.0 | 1862.4 | 1854.4 |
| 170°   | 1876.8 | 1872.2 | 1870.5 | 1882.0 | 1872.2 |
| 172.5° | 1891.2 | 1886.5 | 1884.8 | 1896.3 | 1886.5 |
| 175°   | 1902.6 | 1898.1 | 1894.6 | 1906.1 | 1896.3 |
| 177.5° | 1909.0 | 1904.4 | 1900.9 | 1910.7 | 1900.9 |
| 180°   | 1906.1 | 1906.1 | 1906.1 | 1906.1 | 1906.1 |

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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 | 11.68            | 12.60 | 12.59 | 13.53 | 14.71 | 11.24          | 12.16 | 12.14 | 13.08 | 14.26 |
|                 | 3H   | 13.35            | 14.17 | 14.26 | 15.10 | 16.31 | 12.85          | 13.68 | 13.77 | 14.61 | 15.82 |
|                 | 4H   | 13.93            | 14.71 | 14.86 | 15.65 | 16.86 | 13.44          | 14.22 | 14.37 | 15.16 | 16.37 |
|                 | 6H   | 14.33            | 15.05 | 15.27 | 15.99 | 17.22 | 13.83          | 14.55 | 14.77 | 15.49 | 16.72 |
|                 | 8H   | 14.44            | 15.12 | 15.38 | 16.08 | 17.31 | 13.93          | 14.62 | 14.88 | 15.58 | 16.81 |
|                 | 12H  | 14.49            | 15.14 | 15.44 | 16.09 | 17.34 | 13.98          | 14.63 | 14.93 | 15.58 | 16.83 |
| 4H              | 2H   | 12.15            | 12.93 | 13.08 | 13.87 | 15.08 | 11.79          | 12.57 | 12.73 | 13.51 | 14.73 |
|                 | 3H   | 14.01            | 14.67 | 14.96 | 15.63 | 16.86 | 13.61          | 14.26 | 14.55 | 15.23 | 16.45 |
|                 | 4H   | 14.73            | 15.32 | 15.68 | 16.28 | 17.54 | 14.30          | 14.90 | 15.26 | 15.86 | 17.11 |
|                 | 6H   | 15.24            | 15.75 | 16.21 | 16.74 | 17.99 | 14.81          | 15.32 | 15.78 | 16.31 | 17.56 |
|                 | 8H   | 15.39            | 15.87 | 16.36 | 16.85 | 18.12 | 14.95          | 15.43 | 15.92 | 16.41 | 17.68 |
|                 | 12H  | 15.46            | 15.90 | 16.45 | 16.89 | 18.16 | 15.01          | 15.45 | 16.00 | 16.44 | 17.72 |
| 8H              | 4H   | 14.92            | 15.40 | 15.89 | 16.38 | 17.65 | 14.55          | 15.03 | 15.52 | 16.01 | 17.27 |
|                 | 6H   | 15.55            | 15.95 | 16.55 | 16.97 | 18.23 | 15.17          | 15.57 | 16.16 | 16.59 | 17.85 |
|                 | 8H   | 15.77            | 16.12 | 16.77 | 17.13 | 18.41 | 15.38          | 15.73 | 16.38 | 16.74 | 18.02 |
|                 | 12H  | 15.90            | 16.21 | 16.91 | 17.21 | 18.54 | 15.49          | 15.80 | 16.50 | 16.80 | 18.13 |
| 12H             | 4H   | 14.91            | 15.34 | 15.90 | 16.34 | 17.61 | 14.54          | 14.98 | 15.53 | 15.97 | 17.24 |
|                 | 6H   | 15.58            | 15.93 | 16.58 | 16.94 | 18.22 | 15.21          | 15.56 | 16.21 | 16.57 | 17.85 |
|                 | 8H   | 15.82            | 16.13 | 16.83 | 17.13 | 18.46 | 15.44          | 15.75 | 16.45 | 16.75 | 18.08 |