

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: P911913

Luminaire Tested: DFN2DIP-SQ3F0-070D060US850-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911913  
REPORT IS A COMBINATION OF REPORTS P901423 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-070D060US850-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

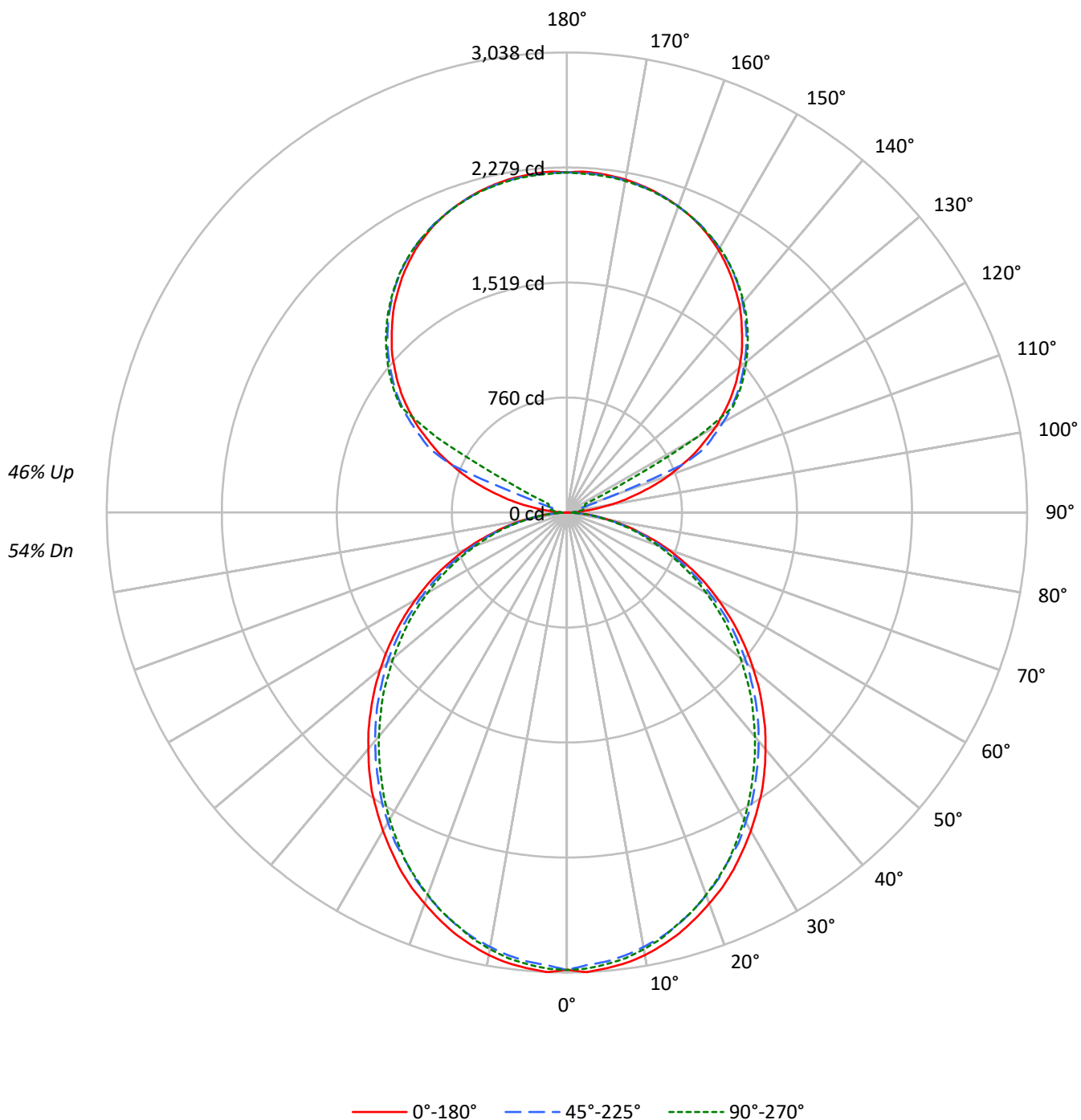
Lumens per Lamp: N/A  
Luminaire Lumens: 14272.8 lumens  
Efficiency: N/A  
Efficacy: 128.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 110.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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 | 85 | 85 | 85 | 72 | 72 | 72 | 60 | 60 | 60 |
| 1   | 99  | 94  | 90  | 87  | 91  | 88  | 84  | 81  | 75 | 73 | 70 | 63 | 62 | 60 | 53 | 52 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 77  | 71  | 67  | 66 | 62 | 58 | 56 | 53 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 76  | 67  | 61  | 56  | 58 | 53 | 49 | 49 | 46 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 53  | 47  | 52 | 46 | 42 | 44 | 40 | 36 | 37 | 34 | 31 |
| 5   | 69  | 57  | 49  | 43  | 64  | 53  | 46  | 41  | 46 | 40 | 36 | 39 | 35 | 32 | 33 | 30 | 27 |
| 6   | 63  | 51  | 43  | 37  | 59  | 48  | 41  | 35  | 42 | 36 | 31 | 36 | 31 | 28 | 30 | 27 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 38 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 28  | 34 | 29 | 25 | 30 | 25 | 22 | 25 | 22 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 26 | 22 | 27 | 23 | 20 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 27  | 22  | 29 | 24 | 20 | 25 | 21 | 18 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3461 | 3461 | 3461 |
| 5°  | 3464 | 3411 | 3435 |
| 10° | 3434 | 3362 | 3387 |
| 15° | 3381 | 3305 | 3313 |
| 20° | 3311 | 3225 | 3238 |
| 25° | 3241 | 3131 | 3151 |
| 30° | 3154 | 3043 | 3040 |
| 35° | 3071 | 2940 | 2923 |
| 40° | 2969 | 2835 | 2812 |
| 45° | 2867 | 2731 | 2698 |
| 50° | 2756 | 2620 | 2567 |
| 55° | 2639 | 2493 | 2445 |
| 60° | 2507 | 2342 | 2306 |
| 65° | 2363 | 2186 | 2142 |
| 70° | 2179 | 1994 | 1965 |
| 75° | 1925 | 1765 | 1800 |
| 80° | 1618 | 1473 | 1488 |
| 85° | 1140 | 977  | 974  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2867 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 284.3   | 2.0       |
| 10°-20°   | 799.9   | 5.6       |
| 20°-30°   | 1175.6  | 8.2       |
| 30°-40°   | 1365.3  | 9.6       |
| 40°-50°   | 1363.6  | 9.6       |
| 50°-60°   | 1189.1  | 8.3       |
| 60°-70°   | 879.0   | 6.2       |
| 70°-80°   | 497.3   | 3.5       |
| 80°-90°   | 135.2   | 0.9       |
| 90°-100°  | 74.1    | 0.5       |
| 100°-110° | 276.0   | 1.9       |
| 110°-120° | 732.1   | 5.1       |
| 120°-130° | 1214.2  | 8.5       |
| 130°-140° | 1289.8  | 9.0       |
| 140°-150° | 1198.7  | 8.4       |
| 150°-160° | 963.8   | 6.8       |
| 160°-170° | 621.0   | 4.4       |
| 170°-180° | 213.7   | 1.5       |
| 0°-30°    | 2259.8  | 15.8      |
| 0°-40°    | 3625.1  | 25.4      |
| 0°-60°    | 6177.8  | 43.3      |
| 0°-90°    | 7689.3  | 53.9      |
| 90°-120°  | 1082.2  | 7.6       |
| 90°-150°  | 4785.0  | 33.5      |
| 90°-180°  | 6583.0  | 46.1      |
| 0°-180°   | 14272.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3021 | 3021  | 3021 | 3021  | 3021 |      |
| 5°   | 3021 | 3009  | 2977 | 3000  | 2995 | 287  |
| 15°  | 2876 | 2858  | 2820 | 2832  | 2818 | 810  |
| 25°  | 2602 | 2579  | 2530 | 2536  | 2530 | 1198 |
| 35°  | 2245 | 2216  | 2170 | 2152  | 2138 | 1402 |
| 45°  | 1827 | 1807  | 1763 | 1731  | 1720 | 1410 |
| 55°  | 1383 | 1365  | 1330 | 1296  | 1281 | 1236 |
| 65°  | 933  | 915   | 886  | 860   | 845  | 922  |
| 75°  | 488  | 482   | 467  | 450   | 456  | 521  |
| 85°  | 119  | 116   | 114  | 104   | 102  | 133  |
| 90°  | 2    | 20    | 32   | 41    | 44   | 13   |
| 95°  | 106  | 52    | 63   | 72    | 70   | 125  |
| 105° | 494  | 543   | 99   | 117   | 124  | 528  |
| 115° | 934  | 962   | 1003 | 250   | 133  | 920  |
| 125° | 1321 | 1342  | 1373 | 1384  | 1389 | 1178 |
| 135° | 1635 | 1661  | 1675 | 1692  | 1688 | 1263 |
| 145° | 1896 | 1895  | 1922 | 1934  | 1926 | 1186 |
| 155° | 2088 | 2074  | 2093 | 2103  | 2090 | 962  |
| 165° | 2200 | 2190  | 2195 | 2207  | 2195 | 622  |
| 175° | 2250 | 2239  | 2242 | 2254  | 2238 | 214  |
| 180° | 2246 | 2246  | 2246 | 2246  | 2246 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3020.6 | 3020.6 | 3020.6 | 3020.6 | 3020.6 |
| 2.5°   | 3038.2 | 3023.7 | 2991.6 | 3020.6 | 3015.0 |
| 5°     | 3020.6 | 3009.3 | 2977.2 | 3000.3 | 2994.7 |
| 7.5°   | 3000.3 | 2983.0 | 2950.9 | 2974.4 | 2968.6 |
| 10°    | 2968.6 | 2948.2 | 2913.3 | 2936.5 | 2927.9 |
| 12.5°  | 2924.8 | 2907.6 | 2872.8 | 2887.2 | 2881.3 |
| 15°    | 2875.5 | 2858.2 | 2820.3 | 2832.1 | 2817.5 |
| 17.5°  | 2814.4 | 2797.2 | 2759.3 | 2773.8 | 2759.3 |
| 20°    | 2747.5 | 2730.4 | 2689.7 | 2698.3 | 2686.9 |
| 22.5°  | 2681.0 | 2654.8 | 2616.9 | 2616.9 | 2611.0 |
| 25°    | 2602.5 | 2579.3 | 2530.1 | 2535.6 | 2530.1 |
| 27.5°  | 2515.2 | 2494.9 | 2457.3 | 2448.7 | 2434.1 |
| 30°    | 2428.4 | 2404.9 | 2361.5 | 2352.9 | 2341.1 |
| 32.5°  | 2335.2 | 2318.0 | 2271.5 | 2253.9 | 2242.2 |
| 35°    | 2245.3 | 2216.3 | 2169.8 | 2152.2 | 2137.7 |
| 37.5°  | 2143.6 | 2117.4 | 2070.8 | 2050.5 | 2036.0 |
| 40°    | 2039.1 | 2015.7 | 1969.1 | 1943.3 | 1931.5 |
| 42.5°  | 1937.4 | 1914.0 | 1867.8 | 1838.5 | 1821.2 |
| 45°    | 1827.1 | 1806.8 | 1763.0 | 1731.3 | 1719.5 |
| 47.5°  | 1719.5 | 1699.2 | 1652.6 | 1620.6 | 1603.4 |
| 50°    | 1606.2 | 1591.6 | 1550.9 | 1510.3 | 1495.8 |
| 52.5°  | 1495.8 | 1475.5 | 1437.9 | 1405.9 | 1385.5 |
| 55°    | 1382.7 | 1365.2 | 1330.4 | 1295.5 | 1281.0 |
| 57.5°  | 1269.4 | 1254.8 | 1216.9 | 1182.1 | 1170.4 |
| 60°    | 1155.9 | 1144.5 | 1103.9 | 1071.8 | 1063.2 |
| 62.5°  | 1045.6 | 1025.3 | 996.3  | 967.4  | 955.6  |
| 65°    | 932.6  | 914.9  | 886.0  | 859.8  | 845.3  |
| 67.5°  | 816.3  | 801.6  | 775.6  | 755.3  | 743.6  |
| 70°    | 708.8  | 697.1  | 670.8  | 650.5  | 639.1  |
| 72.5°  | 598.4  | 586.8  | 572.2  | 551.9  | 543.3  |
| 75°    | 487.8  | 482.3  | 467.4  | 450.3  | 456.1  |
| 77.5°  | 389.3  | 377.5  | 371.6  | 363.0  | 354.4  |
| 80°    | 290.6  | 287.6  | 281.7  | 273.0  | 267.2  |
| 82.5°  | 197.5  | 197.5  | 194.7  | 183.1  | 183.1  |
| 85°    | 119.0  | 116.2  | 113.5  | 104.5  | 101.7  |
| 87.5°  | 52.3   | 46.6   | 40.7   | 32.1   | 28.9   |
| 90°    | 1.6    | 19.5   | 32.4   | 40.7   | 43.8   |
| 92.5°  | 40.7   | 34.2   | 38.9   | 42.3   | 43.8   |
| 95°    | 105.6  | 51.9   | 63.3   | 71.6   | 69.9   |
| 97.5°  | 190.1  | 56.9   | 82.7   | 87.8   | 89.4   |
| 100°   | 287.7  | 65.0   | 92.6   | 105.6  | 108.8  |
| 102.5° | 394.8  | 391.7  | 95.9   | 113.7  | 118.7  |
| 105°   | 493.9  | 542.7  | 99.1   | 116.9  | 123.5  |
| 107.5° | 609.4  | 649.9  | 102.5  | 120.2  | 126.8  |
| 110°   | 720.0  | 753.9  | 284.5  | 122.0  | 128.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 823.9  | 853.0  | 825.4  | 125.0  | 130.1  |
| 115°   | 934.3  | 961.9  | 1002.6 | 250.3  | 133.3  |
| 117.5° | 1030.2 | 1062.6 | 1090.4 | 857.9  | 432.2  |
| 120°   | 1137.5 | 1161.8 | 1191.2 | 1210.6 | 991.2  |
| 122.5° | 1228.3 | 1254.4 | 1287.0 | 1296.6 | 1298.4 |
| 125°   | 1321.0 | 1342.2 | 1373.1 | 1384.5 | 1389.2 |
| 127.5° | 1405.5 | 1428.3 | 1452.8 | 1469.0 | 1470.5 |
| 130°   | 1485.2 | 1511.2 | 1529.0 | 1546.9 | 1545.4 |
| 132.5° | 1566.5 | 1587.6 | 1605.4 | 1620.0 | 1618.5 |
| 135°   | 1634.8 | 1660.8 | 1675.3 | 1691.7 | 1688.3 |
| 137.5° | 1706.1 | 1725.6 | 1742.0 | 1758.2 | 1753.4 |
| 140°   | 1776.0 | 1789.1 | 1806.9 | 1821.5 | 1813.4 |
| 142.5° | 1834.6 | 1846.0 | 1867.1 | 1880.0 | 1871.9 |
| 145°   | 1896.4 | 1894.6 | 1922.2 | 1933.7 | 1925.6 |
| 147.5° | 1949.8 | 1945.0 | 1972.6 | 1980.7 | 1974.4 |
| 150°   | 2002.0 | 1990.5 | 2016.6 | 2026.3 | 2018.2 |
| 152.5° | 2045.8 | 2032.8 | 2057.1 | 2067.0 | 2055.5 |
| 155°   | 2088.0 | 2073.5 | 2093.0 | 2102.7 | 2089.7 |
| 157.5° | 2122.2 | 2109.2 | 2123.8 | 2135.3 | 2122.2 |
| 160°   | 2151.5 | 2141.6 | 2151.5 | 2161.1 | 2149.8 |
| 162.5° | 2177.3 | 2167.7 | 2175.7 | 2187.2 | 2172.5 |
| 165°   | 2200.1 | 2190.5 | 2195.3 | 2206.7 | 2195.3 |
| 167.5° | 2218.0 | 2208.2 | 2213.2 | 2224.7 | 2209.9 |
| 170°   | 2232.7 | 2222.9 | 2226.2 | 2237.5 | 2222.9 |
| 172.5° | 2242.4 | 2232.7 | 2236.0 | 2247.4 | 2232.7 |
| 175°   | 2250.5 | 2239.1 | 2242.4 | 2253.7 | 2237.5 |
| 177.5° | 2253.7 | 2242.4 | 2244.1 | 2255.5 | 2240.8 |
| 180°   | 2245.6 | 2245.6 | 2245.6 | 2245.6 | 2245.6 |

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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 | 11.90            | 12.80 | 12.83 | 13.74 | 14.96 | 11.46          | 12.36 | 12.38 | 13.30 | 14.51 |
|                 | 3H   | 13.56            | 14.37 | 14.50 | 15.32 | 16.56 | 13.07          | 13.88 | 14.01 | 14.83 | 16.06 |
|                 | 4H   | 14.15            | 14.91 | 15.10 | 15.86 | 17.11 | 13.65          | 14.41 | 14.60 | 15.37 | 16.62 |
|                 | 6H   | 14.55            | 15.25 | 15.51 | 16.21 | 17.47 | 14.05          | 14.75 | 15.01 | 15.71 | 16.97 |
|                 | 8H   | 14.65            | 15.32 | 15.62 | 16.30 | 17.55 | 14.15          | 14.82 | 15.12 | 15.79 | 17.05 |
|                 | 12H  | 14.70            | 15.33 | 15.67 | 16.31 | 17.59 | 14.19          | 14.82 | 15.16 | 15.80 | 17.08 |
| 4H              | 2H   | 12.36            | 13.13 | 13.32 | 14.08 | 15.33 | 12.01          | 12.77 | 12.96 | 13.73 | 14.97 |
|                 | 3H   | 14.23            | 14.86 | 15.19 | 15.85 | 17.11 | 13.82          | 14.46 | 14.78 | 15.44 | 16.70 |
|                 | 4H   | 14.94            | 15.52 | 15.91 | 16.50 | 17.79 | 14.52          | 15.10 | 15.49 | 16.08 | 17.36 |
|                 | 6H   | 15.45            | 15.95 | 16.44 | 16.96 | 18.24 | 15.02          | 15.52 | 16.01 | 16.52 | 17.81 |
|                 | 8H   | 15.60            | 16.07 | 16.59 | 17.06 | 18.36 | 15.16          | 15.63 | 16.15 | 16.63 | 17.93 |
|                 | 12H  | 15.67            | 16.10 | 16.68 | 17.11 | 18.41 | 15.22          | 15.65 | 16.23 | 16.66 | 17.96 |
| 8H              | 4H   | 15.14            | 15.60 | 16.12 | 16.60 | 17.90 | 14.76          | 15.23 | 15.75 | 16.22 | 17.52 |
|                 | 6H   | 15.76            | 16.15 | 16.78 | 17.19 | 18.48 | 15.38          | 15.76 | 16.39 | 16.80 | 18.10 |
|                 | 8H   | 15.98            | 16.32 | 17.00 | 17.35 | 18.66 | 15.59          | 15.93 | 16.61 | 16.95 | 18.27 |
|                 | 12H  | 16.11            | 16.41 | 17.13 | 17.43 | 18.79 | 15.70          | 16.00 | 16.72 | 17.02 | 18.38 |
| 12H             | 4H   | 15.12            | 15.54 | 16.13 | 16.56 | 17.86 | 14.75          | 15.18 | 15.76 | 16.19 | 17.49 |
|                 | 6H   | 15.79            | 16.13 | 16.81 | 17.16 | 18.47 | 15.42          | 15.76 | 16.44 | 16.78 | 18.10 |
|                 | 8H   | 16.03            | 16.33 | 17.06 | 17.35 | 18.71 | 15.65          | 15.95 | 16.67 | 16.97 | 18.33 |