

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: P926331

Luminaire Tested: DFN2DIP-TR3F0-080D070US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926331  
REPORT IS A COMBINATION OF REPORTS P901857 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D070US950-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

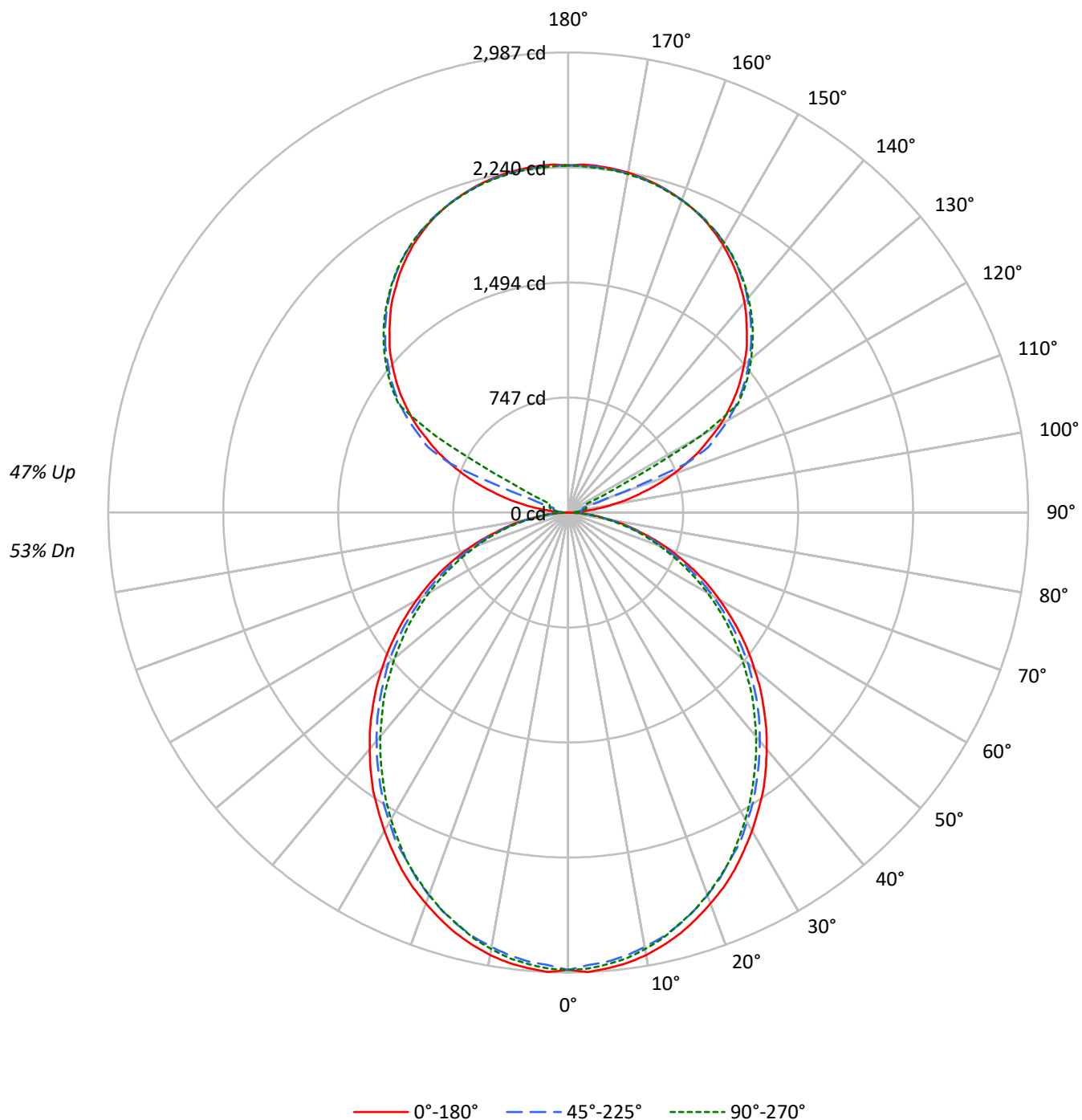
Lumens per Lamp: N/A  
Luminaire Lumens: 14166.9 lumens  
Efficiency: N/A  
Efficacy: 105.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 134.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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 | 59 | 59 | 59 |
| 1   | 99  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 75 | 72 | 70 | 63 | 61 | 60 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 76  | 67  | 61  | 56  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 53  | 47  | 51 | 46 | 42 | 44 | 40 | 36 | 37 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 41  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 30 | 27 |
| 6   | 63  | 51  | 43  | 37  | 59  | 48  | 41  | 35  | 41 | 36 | 31 | 35 | 31 | 28 | 30 | 26 | 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  | 27  | 34 | 29 | 25 | 30 | 25 | 22 | 25 | 22 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 31 | 26 | 22 | 27 | 23 | 20 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 24 | 20 | 25 | 21 | 18 | 21 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3700 | 3700 | 3700 |
| 5°  | 3704 | 3646 | 3671 |
| 10° | 3672 | 3594 | 3619 |
| 15° | 3616 | 3531 | 3539 |
| 20° | 3541 | 3446 | 3457 |
| 25° | 3467 | 3345 | 3363 |
| 30° | 3374 | 3250 | 3243 |
| 35° | 3285 | 3139 | 3117 |
| 40° | 3177 | 3027 | 2997 |
| 45° | 3068 | 2914 | 2874 |
| 50° | 2950 | 2795 | 2732 |
| 55° | 2826 | 2658 | 2600 |
| 60° | 2685 | 2496 | 2450 |
| 65° | 2531 | 2327 | 2272 |
| 70° | 2336 | 2122 | 2080 |
| 75° | 2065 | 1875 | 1900 |
| 80° | 1738 | 1560 | 1561 |
| 85° | 1228 | 1028 | 1008 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3068 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 279.5   | 2.0       |
| 10°-20°   | 786.4   | 5.6       |
| 20°-30°   | 1155.7  | 8.2       |
| 30°-40°   | 1342.3  | 9.5       |
| 40°-50°   | 1340.6  | 9.5       |
| 50°-60°   | 1169.0  | 8.3       |
| 60°-70°   | 864.1   | 6.1       |
| 70°-80°   | 488.9   | 3.5       |
| 80°-90°   | 133.0   | 0.9       |
| 90°-100°  | 74.3    | 0.5       |
| 100°-110° | 277.0   | 2.0       |
| 110°-120° | 734.8   | 5.2       |
| 120°-130° | 1218.6  | 8.6       |
| 130°-140° | 1294.5  | 9.1       |
| 140°-150° | 1203.1  | 8.5       |
| 150°-160° | 967.2   | 6.8       |
| 160°-170° | 623.3   | 4.4       |
| 170°-180° | 214.5   | 1.5       |
| 0°-30°    | 2221.6  | 15.7      |
| 0°-40°    | 3563.9  | 25.2      |
| 0°-60°    | 6073.6  | 42.9      |
| 0°-90°    | 7559.6  | 53.4      |
| 90°-120°  | 1086.1  | 7.7       |
| 90°-150°  | 4802.2  | 33.9      |
| 90°-180°  | 6607.0  | 46.6      |
| 0°-180°   | 14166.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2970 | 2970  | 2970 | 2970  | 2970 |      |
| 5°   | 2970 | 2958  | 2927 | 2950  | 2944 | 282  |
| 15°  | 2827 | 2810  | 2773 | 2784  | 2770 | 796  |
| 25°  | 2558 | 2536  | 2487 | 2493  | 2487 | 1177 |
| 35°  | 2207 | 2179  | 2133 | 2116  | 2102 | 1378 |
| 45°  | 1796 | 1776  | 1733 | 1702  | 1691 | 1386 |
| 55°  | 1359 | 1342  | 1308 | 1274  | 1259 | 1215 |
| 65°  | 917  | 900   | 871  | 845   | 831  | 906  |
| 75°  | 480  | 474   | 460  | 443   | 448  | 512  |
| 85°  | 117  | 114   | 112  | 103   | 100  | 130  |
| 90°  | 2    | 20    | 32   | 41    | 44   | 13   |
| 95°  | 106  | 52    | 64   | 72    | 70   | 125  |
| 105° | 496  | 545   | 100  | 117   | 124  | 530  |
| 115° | 938  | 965   | 1006 | 251   | 134  | 923  |
| 125° | 1326 | 1347  | 1378 | 1390  | 1394 | 1182 |
| 135° | 1641 | 1667  | 1681 | 1698  | 1694 | 1267 |
| 145° | 1903 | 1902  | 1929 | 1941  | 1932 | 1190 |
| 155° | 2096 | 2081  | 2100 | 2110  | 2097 | 966  |
| 165° | 2208 | 2198  | 2203 | 2215  | 2203 | 624  |
| 175° | 2259 | 2247  | 2250 | 2262  | 2246 | 215  |
| 180° | 2254 | 2254  | 2254 | 2254  | 2254 |      |



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2969.6 | 2969.6 | 2969.6 | 2969.6 | 2969.6 |
| 2.5°   | 2986.9 | 2972.7 | 2941.2 | 2969.6 | 2964.2 |
| 5°     | 2969.6 | 2958.4 | 2927.0 | 2949.7 | 2944.2 |
| 7.5°   | 2949.7 | 2932.7 | 2901.2 | 2924.2 | 2918.5 |
| 10°    | 2918.5 | 2898.4 | 2864.2 | 2886.9 | 2878.5 |
| 12.5°  | 2875.5 | 2858.5 | 2824.2 | 2838.4 | 2832.7 |
| 15°    | 2827.0 | 2810.0 | 2772.7 | 2784.2 | 2770.0 |
| 17.5°  | 2767.0 | 2750.0 | 2712.7 | 2727.0 | 2712.7 |
| 20°    | 2701.3 | 2684.3 | 2644.3 | 2652.8 | 2641.5 |
| 22.5°  | 2635.8 | 2610.0 | 2572.7 | 2572.7 | 2567.0 |
| 25°    | 2558.5 | 2535.8 | 2487.4 | 2492.8 | 2487.4 |
| 27.5°  | 2472.8 | 2452.8 | 2415.8 | 2407.3 | 2393.1 |
| 30°    | 2387.4 | 2364.3 | 2321.7 | 2313.2 | 2301.6 |
| 32.5°  | 2295.9 | 2278.9 | 2233.1 | 2215.9 | 2204.4 |
| 35°    | 2207.4 | 2178.9 | 2133.1 | 2115.9 | 2101.7 |
| 37.5°  | 2107.4 | 2081.6 | 2035.9 | 2015.9 | 2001.7 |
| 40°    | 2004.7 | 1981.6 | 1936.0 | 1910.5 | 1898.9 |
| 42.5°  | 1904.8 | 1881.7 | 1836.3 | 1807.4 | 1790.6 |
| 45°    | 1796.3 | 1776.3 | 1733.2 | 1702.0 | 1690.6 |
| 47.5°  | 1690.6 | 1670.5 | 1624.8 | 1593.3 | 1576.3 |
| 50°    | 1579.1 | 1564.8 | 1524.8 | 1484.8 | 1470.6 |
| 52.5°  | 1470.6 | 1450.6 | 1413.6 | 1382.2 | 1362.1 |
| 55°    | 1359.4 | 1342.1 | 1307.9 | 1273.7 | 1259.4 |
| 57.5°  | 1247.9 | 1233.7 | 1196.4 | 1162.2 | 1150.6 |
| 60°    | 1136.4 | 1125.2 | 1085.2 | 1053.7 | 1045.2 |
| 62.5°  | 1027.9 | 1008.0 | 979.5  | 951.0  | 939.5  |
| 65°    | 916.8  | 899.5  | 871.0  | 845.2  | 831.0  |
| 67.5°  | 802.5  | 788.0  | 762.5  | 742.6  | 731.1  |
| 70°    | 696.8  | 685.3  | 659.6  | 639.6  | 628.3  |
| 72.5°  | 588.3  | 576.9  | 562.6  | 542.6  | 534.1  |
| 75°    | 479.6  | 474.1  | 459.6  | 442.7  | 448.4  |
| 77.5°  | 382.6  | 371.1  | 365.4  | 356.9  | 348.4  |
| 80°    | 285.7  | 282.7  | 276.9  | 268.5  | 262.6  |
| 82.5°  | 194.2  | 194.2  | 191.5  | 179.9  | 179.9  |
| 85°    | 117.0  | 114.2  | 111.5  | 102.7  | 100.0  |
| 87.5°  | 51.5   | 45.8   | 40.0   | 31.5   | 28.5   |
| 90°    | 1.5    | 19.6   | 32.5   | 40.8   | 44.0   |
| 92.5°  | 40.8   | 34.2   | 39.1   | 42.5   | 44.0   |
| 95°    | 105.9  | 52.1   | 63.5   | 71.8   | 70.1   |
| 97.5°  | 190.7  | 57.1   | 83.1   | 88.1   | 89.7   |
| 100°   | 288.8  | 65.3   | 92.9   | 105.9  | 109.2  |
| 102.5° | 396.2  | 393.1  | 96.3   | 114.1  | 119.1  |
| 105°   | 495.8  | 544.7  | 99.5   | 117.3  | 123.9  |
| 107.5° | 611.5  | 652.2  | 102.8  | 120.7  | 127.3  |
| 110°   | 722.6  | 756.6  | 285.4  | 122.4  | 128.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 826.9  | 856.1  | 828.5  | 125.5  | 130.5  |
| 115°   | 937.7  | 965.4  | 1006.2 | 251.2  | 133.8  |
| 117.5° | 1033.9 | 1066.5 | 1094.3 | 861.0  | 433.8  |
| 120°   | 1141.6 | 1166.0 | 1195.5 | 1215.0 | 994.8  |
| 122.5° | 1232.8 | 1258.9 | 1291.7 | 1301.4 | 1303.1 |
| 125°   | 1325.8 | 1347.0 | 1378.1 | 1389.5 | 1394.3 |
| 127.5° | 1410.6 | 1433.4 | 1458.0 | 1474.3 | 1475.8 |
| 130°   | 1490.5 | 1516.7 | 1534.5 | 1552.5 | 1551.0 |
| 132.5° | 1572.1 | 1593.4 | 1611.2 | 1625.9 | 1624.4 |
| 135°   | 1640.6 | 1666.7 | 1681.3 | 1697.7 | 1694.5 |
| 137.5° | 1712.2 | 1731.9 | 1748.3 | 1764.6 | 1759.7 |
| 140°   | 1782.4 | 1795.5 | 1813.4 | 1828.1 | 1819.9 |
| 142.5° | 1841.2 | 1852.7 | 1873.8 | 1886.7 | 1878.6 |
| 145°   | 1903.2 | 1901.5 | 1929.2 | 1940.6 | 1932.5 |
| 147.5° | 1956.8 | 1952.1 | 1979.7 | 1987.8 | 1981.5 |
| 150°   | 2009.1 | 1997.8 | 2023.9 | 2033.5 | 2025.4 |
| 152.5° | 2053.1 | 2040.1 | 2064.6 | 2074.4 | 2063.0 |
| 155°   | 2095.6 | 2081.0 | 2100.5 | 2110.2 | 2097.3 |
| 157.5° | 2129.8 | 2116.8 | 2131.5 | 2143.0 | 2129.8 |
| 160°   | 2159.3 | 2149.4 | 2159.3 | 2168.9 | 2157.5 |
| 162.5° | 2185.2 | 2175.5 | 2183.6 | 2195.1 | 2180.4 |
| 165°   | 2208.0 | 2198.4 | 2203.2 | 2214.6 | 2203.2 |
| 167.5° | 2226.1 | 2216.1 | 2221.2 | 2232.6 | 2218.0 |
| 170°   | 2240.8 | 2230.9 | 2234.2 | 2245.6 | 2230.9 |
| 172.5° | 2250.5 | 2240.8 | 2244.1 | 2255.4 | 2240.8 |
| 175°   | 2258.6 | 2247.1 | 2250.5 | 2261.8 | 2245.6 |
| 177.5° | 2261.8 | 2250.5 | 2252.2 | 2263.7 | 2248.9 |
| 180°   | 2253.7 | 2253.7 | 2253.7 | 2253.7 | 2253.7 |

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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 | 12.07            | 12.96 | 13.00 | 13.91 | 15.13 | 11.64          | 12.54 | 12.57 | 13.48 | 14.70 |
|                 | 3H   | 13.73            | 14.53 | 14.66 | 15.48 | 16.73 | 13.26          | 14.06 | 14.20 | 15.01 | 16.26 |
|                 | 4H   | 14.31            | 15.07 | 15.26 | 16.02 | 17.28 | 13.84          | 14.60 | 14.79 | 15.56 | 16.81 |
|                 | 6H   | 14.70            | 15.40 | 15.67 | 16.36 | 17.63 | 14.23          | 14.93 | 15.20 | 15.90 | 17.16 |
|                 | 8H   | 14.80            | 15.47 | 15.78 | 16.45 | 17.72 | 14.34          | 15.00 | 15.31 | 15.98 | 17.25 |
|                 | 12H  | 14.85            | 15.48 | 15.83 | 16.46 | 17.75 | 14.38          | 15.01 | 15.35 | 15.98 | 17.27 |
| 4H              | 2H   | 12.53            | 13.29 | 13.49 | 14.25 | 15.51 | 12.19          | 12.95 | 13.15 | 13.91 | 15.16 |
|                 | 3H   | 14.39            | 15.02 | 15.36 | 16.01 | 17.28 | 14.00          | 14.63 | 14.97 | 15.62 | 16.89 |
|                 | 4H   | 15.10            | 15.68 | 16.08 | 16.66 | 17.95 | 14.70          | 15.28 | 15.68 | 16.26 | 17.55 |
|                 | 6H   | 15.61            | 16.11 | 16.60 | 17.11 | 18.40 | 15.20          | 15.70 | 16.19 | 16.71 | 18.00 |
|                 | 8H   | 15.75            | 16.22 | 16.75 | 17.22 | 18.52 | 15.35          | 15.81 | 16.34 | 16.81 | 18.12 |
|                 | 12H  | 15.82            | 16.24 | 16.84 | 17.26 | 18.57 | 15.41          | 15.83 | 16.42 | 16.84 | 18.16 |
| 8H              | 4H   | 15.30            | 15.76 | 16.29 | 16.76 | 18.07 | 14.94          | 15.40 | 15.93 | 16.40 | 17.71 |
|                 | 6H   | 15.92            | 16.30 | 16.93 | 17.34 | 18.65 | 15.56          | 15.94 | 16.58 | 16.98 | 18.29 |
|                 | 8H   | 16.13            | 16.47 | 17.16 | 17.50 | 18.82 | 15.77          | 16.11 | 16.79 | 17.14 | 18.46 |
|                 | 12H  | 16.26            | 16.56 | 17.29 | 17.58 | 18.95 | 15.88          | 16.18 | 16.91 | 17.20 | 18.57 |
| 12H             | 4H   | 15.28            | 15.70 | 16.29 | 16.72 | 18.03 | 14.93          | 15.35 | 15.94 | 16.37 | 17.68 |
|                 | 6H   | 15.94            | 16.28 | 16.97 | 17.31 | 18.64 | 15.60          | 15.94 | 16.62 | 16.97 | 18.29 |
|                 | 8H   | 16.18            | 16.48 | 17.21 | 17.50 | 18.87 | 15.83          | 16.13 | 16.86 | 17.15 | 18.52 |