

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: P912672

Luminaire Tested: DFN2DIP-TR3F0-070D090US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912672  
REPORT IS A COMBINATION OF REPORTS P900363 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D090US850-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

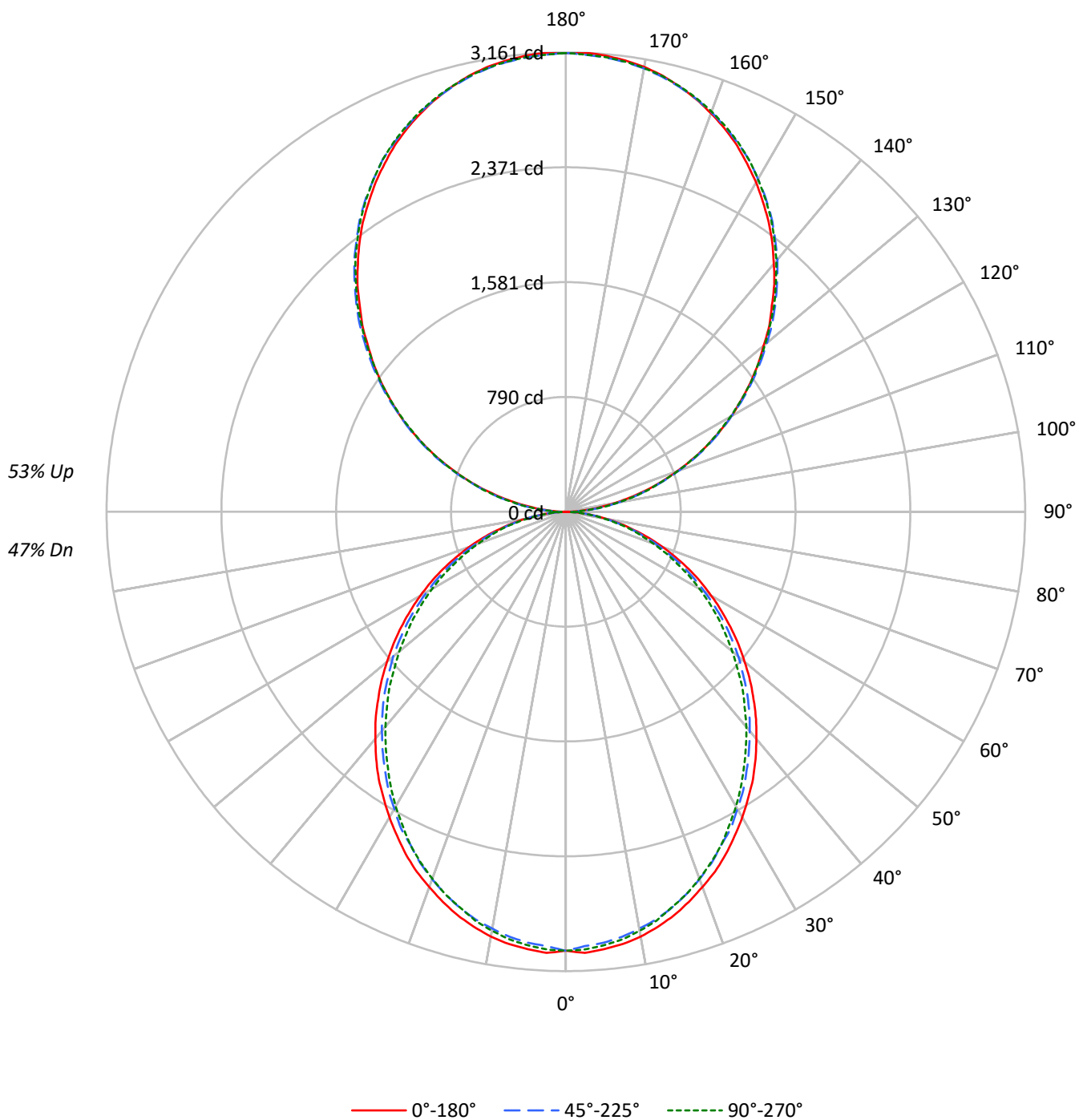
Lumens per Lamp: N/A  
Luminaire Lumens: 16518.6 lumens  
Efficiency: N/A  
Efficacy: 117.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 141.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 67 | 67 | 67 | 53 | 53 | 53 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 59 | 57 | 55 | 47 | 46 | 45 |
| 2   | 88  | 81  | 75  | 70  | 81 | 75 | 69 | 65 | 63 | 59 | 55 | 51 | 49 | 46 | 41 | 39 | 38 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 59 | 54 | 55 | 50 | 47 | 45 | 42 | 39 | 37 | 34 | 32 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 47 | 39 | 34 | 39 | 34 | 30 | 33 | 29 | 25 | 27 | 24 | 21 |
| 7   | 58  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 27 | 33 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 21 | 18 | 15 |
| 10  | 46  | 34  | 27  | 22  | 43 | 32 | 26 | 21 | 28 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3764 | 3764 | 3764 |
| 5°  | 3768 | 3708 | 3734 |
| 10° | 3735 | 3655 | 3681 |
| 15° | 3678 | 3592 | 3599 |
| 20° | 3602 | 3505 | 3516 |
| 25° | 3526 | 3402 | 3420 |
| 30° | 3431 | 3306 | 3299 |
| 35° | 3342 | 3193 | 3171 |
| 40° | 3231 | 3078 | 3048 |
| 45° | 3121 | 2964 | 2923 |
| 50° | 3001 | 2843 | 2779 |
| 55° | 2874 | 2704 | 2645 |
| 60° | 2731 | 2539 | 2492 |
| 65° | 2575 | 2367 | 2311 |
| 70° | 2376 | 2158 | 2116 |
| 75° | 2100 | 1907 | 1932 |
| 80° | 1768 | 1587 | 1588 |
| 85° | 1249 | 1046 | 1025 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3121 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 284.3   | 1.7       |
| 10°-20°   | 799.9   | 4.8       |
| 20°-30°   | 1175.6  | 7.1       |
| 30°-40°   | 1365.3  | 8.3       |
| 40°-50°   | 1363.6  | 8.3       |
| 50°-60°   | 1189.1  | 7.2       |
| 60°-70°   | 879.0   | 5.3       |
| 70°-80°   | 497.3   | 3.0       |
| 80°-90°   | 140.2   | 0.8       |
| 90°-100°  | 195.3   | 1.2       |
| 100°-110° | 620.6   | 3.8       |
| 110°-120° | 1062.1  | 6.4       |
| 120°-130° | 1396.8  | 8.5       |
| 130°-140° | 1567.9  | 9.5       |
| 140°-150° | 1537.5  | 9.3       |
| 150°-160° | 1289.7  | 7.8       |
| 160°-170° | 855.3   | 5.2       |
| 170°-180° | 299.0   | 1.8       |
| 0°-30°    | 2259.8  | 13.7      |
| 0°-40°    | 3625.1  | 21.9      |
| 0°-60°    | 6177.8  | 37.4      |
| 0°-90°    | 7694.3  | 46.6      |
| 90°-120°  | 1878.1  | 11.4      |
| 90°-150°  | 6380.2  | 38.6      |
| 90°-180°  | 8824.0  | 53.4      |
| 0°-180°   | 16518.6 | 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°  | 3    | 34    | 93   | 88    | 90   | 16   |
| 95°  | 139  | 166   | 170  | 170   | 166  | 155  |
| 105° | 573  | 580   | 586  | 591   | 591  | 605  |
| 115° | 1066 | 1081  | 1076 | 1074  | 1066 | 1054 |
| 125° | 1550 | 1574  | 1566 | 1558  | 1555 | 1385 |
| 135° | 2005 | 2035  | 2040 | 2038  | 2030 | 1550 |
| 145° | 2434 | 2453  | 2468 | 2471  | 2461 | 1521 |
| 155° | 2784 | 2791  | 2800 | 2813  | 2805 | 1281 |
| 165° | 3028 | 3025  | 3025 | 3044  | 3031 | 854  |
| 175° | 3151 | 3143  | 3138 | 3157  | 3140 | 299  |
| 180° | 3157 | 3157  | 3157 | 3157  | 3157 |      |

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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°    | 2.9    | 34.3   | 93.3   | 87.5   | 90.4   |
| 92.5°  | 59.0   | 80.0   | 82.8   | 85.6   | 85.6   |
| 95°    | 139.0  | 165.6  | 170.3  | 170.3  | 165.6  |
| 97.5°  | 231.2  | 256.0  | 266.5  | 266.5  | 266.5  |
| 100°   | 337.8  | 359.8  | 367.3  | 367.3  | 364.5  |
| 102.5° | 450.1  | 466.3  | 476.8  | 479.6  | 476.8  |
| 105°   | 572.9  | 580.5  | 586.2  | 591.0  | 591.0  |
| 107.5° | 694.7  | 706.1  | 706.1  | 708.0  | 694.7  |
| 110°   | 812.7  | 828.0  | 828.0  | 828.0  | 820.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 940.2  | 956.4  | 953.5  | 946.0  | 940.2  |
| 115°   | 1065.9 | 1081.1 | 1076.3 | 1073.5 | 1065.9 |
| 117.5° | 1190.5 | 1211.5 | 1198.2 | 1190.5 | 1182.9 |
| 120°   | 1316.2 | 1337.0 | 1316.2 | 1316.2 | 1307.5 |
| 122.5° | 1430.3 | 1457.0 | 1443.7 | 1436.0 | 1430.3 |
| 125°   | 1550.3 | 1574.0 | 1566.5 | 1557.8 | 1555.0 |
| 127.5° | 1667.3 | 1696.8 | 1686.3 | 1674.9 | 1667.3 |
| 130°   | 1776.7 | 1811.0 | 1806.2 | 1800.5 | 1790.0 |
| 132.5° | 1899.5 | 1926.1 | 1928.0 | 1914.7 | 1907.1 |
| 135°   | 2005.1 | 2034.6 | 2040.3 | 2037.5 | 2029.9 |
| 137.5° | 2123.1 | 2146.9 | 2151.7 | 2149.8 | 2138.4 |
| 140°   | 2226.9 | 2250.6 | 2263.9 | 2263.9 | 2253.5 |
| 142.5° | 2333.4 | 2357.2 | 2364.8 | 2367.7 | 2357.2 |
| 145°   | 2434.4 | 2453.3 | 2468.5 | 2471.4 | 2461.0 |
| 147.5° | 2524.7 | 2548.5 | 2559.9 | 2564.7 | 2554.2 |
| 150°   | 2618.0 | 2634.2 | 2644.6 | 2653.2 | 2644.6 |
| 152.5° | 2700.7 | 2716.9 | 2730.2 | 2740.8 | 2730.2 |
| 155°   | 2783.6 | 2791.1 | 2799.8 | 2813.1 | 2804.6 |
| 157.5° | 2854.9 | 2860.7 | 2865.4 | 2884.4 | 2871.1 |
| 160°   | 2918.7 | 2924.4 | 2927.3 | 2943.4 | 2932.0 |
| 162.5° | 2977.7 | 2977.7 | 2980.5 | 2998.6 | 2985.3 |
| 165°   | 3028.1 | 3025.2 | 3025.2 | 3044.3 | 3031.0 |
| 167.5° | 3073.8 | 3065.3 | 3065.3 | 3084.2 | 3070.9 |
| 170°   | 3108.1 | 3100.4 | 3097.7 | 3116.6 | 3100.4 |
| 172.5° | 3131.8 | 3124.3 | 3121.4 | 3140.5 | 3124.3 |
| 175°   | 3150.9 | 3143.2 | 3137.6 | 3156.7 | 3140.5 |
| 177.5° | 3161.3 | 3153.8 | 3148.0 | 3164.2 | 3148.0 |
| 180°   | 3156.7 | 3156.7 | 3156.7 | 3156.7 | 3156.7 |

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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 | 11.50            | 12.33 | 12.48 | 13.33 | 14.65 | 11.07          | 11.90 | 12.06 | 12.90 | 14.22 |
|                 | 3H   | 13.15            | 13.89 | 14.14 | 14.90 | 16.24 | 12.68          | 13.42 | 13.68 | 14.43 | 15.77 |
|                 | 4H   | 13.73            | 14.43 | 14.74 | 15.44 | 16.79 | 13.26          | 13.97 | 14.27 | 14.98 | 16.32 |
|                 | 6H   | 14.12            | 14.77 | 15.14 | 15.78 | 17.15 | 13.65          | 14.30 | 14.67 | 15.31 | 16.68 |
|                 | 8H   | 14.22            | 14.84 | 15.24 | 15.87 | 17.23 | 13.75          | 14.37 | 14.78 | 15.40 | 16.76 |
|                 | 12H  | 14.26            | 14.85 | 15.29 | 15.88 | 17.26 | 13.79          | 14.38 | 14.82 | 15.40 | 16.78 |
| 4H              | 2H   | 11.95            | 12.66 | 12.97 | 13.67 | 15.02 | 11.61          | 12.32 | 12.63 | 13.33 | 14.68 |
|                 | 3H   | 13.81            | 14.40 | 14.83 | 15.43 | 16.80 | 13.42          | 14.01 | 14.44 | 15.04 | 16.41 |
|                 | 4H   | 14.51            | 15.05 | 15.54 | 16.08 | 17.47 | 14.11          | 14.65 | 15.14 | 15.68 | 17.07 |
|                 | 6H   | 15.02            | 15.48 | 16.06 | 16.54 | 17.92 | 14.61          | 15.08 | 15.65 | 16.13 | 17.51 |
|                 | 8H   | 15.16            | 15.59 | 16.20 | 16.64 | 18.04 | 14.75          | 15.19 | 15.80 | 16.24 | 17.63 |
|                 | 12H  | 15.23            | 15.62 | 16.29 | 16.68 | 18.08 | 14.81          | 15.20 | 15.87 | 16.27 | 17.67 |
| 8H              | 4H   | 14.70            | 15.14 | 15.74 | 16.18 | 17.58 | 14.34          | 14.78 | 15.39 | 15.83 | 17.22 |
|                 | 6H   | 15.32            | 15.68 | 16.39 | 16.77 | 18.16 | 14.96          | 15.32 | 16.03 | 16.41 | 17.80 |
|                 | 8H   | 15.53            | 15.85 | 16.61 | 16.92 | 18.34 | 15.17          | 15.49 | 16.25 | 16.56 | 17.97 |
|                 | 12H  | 15.66            | 15.94 | 16.74 | 17.00 | 18.46 | 15.28          | 15.56 | 16.36 | 16.63 | 18.08 |
| 12H             | 4H   | 14.68            | 15.08 | 15.75 | 16.14 | 17.54 | 14.34          | 14.73 | 15.40 | 15.79 | 17.19 |
|                 | 6H   | 15.35            | 15.66 | 16.42 | 16.74 | 18.15 | 15.00          | 15.32 | 16.07 | 16.39 | 17.80 |
|                 | 8H   | 15.58            | 15.86 | 16.66 | 16.93 | 18.38 | 15.23          | 15.51 | 16.31 | 16.58 | 18.03 |