

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: P920294

Luminaire Tested: DFN2DIP-SQ3F0-120D100US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920294  
REPORT IS A COMBINATION OF REPORTS P899986 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D100US935-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

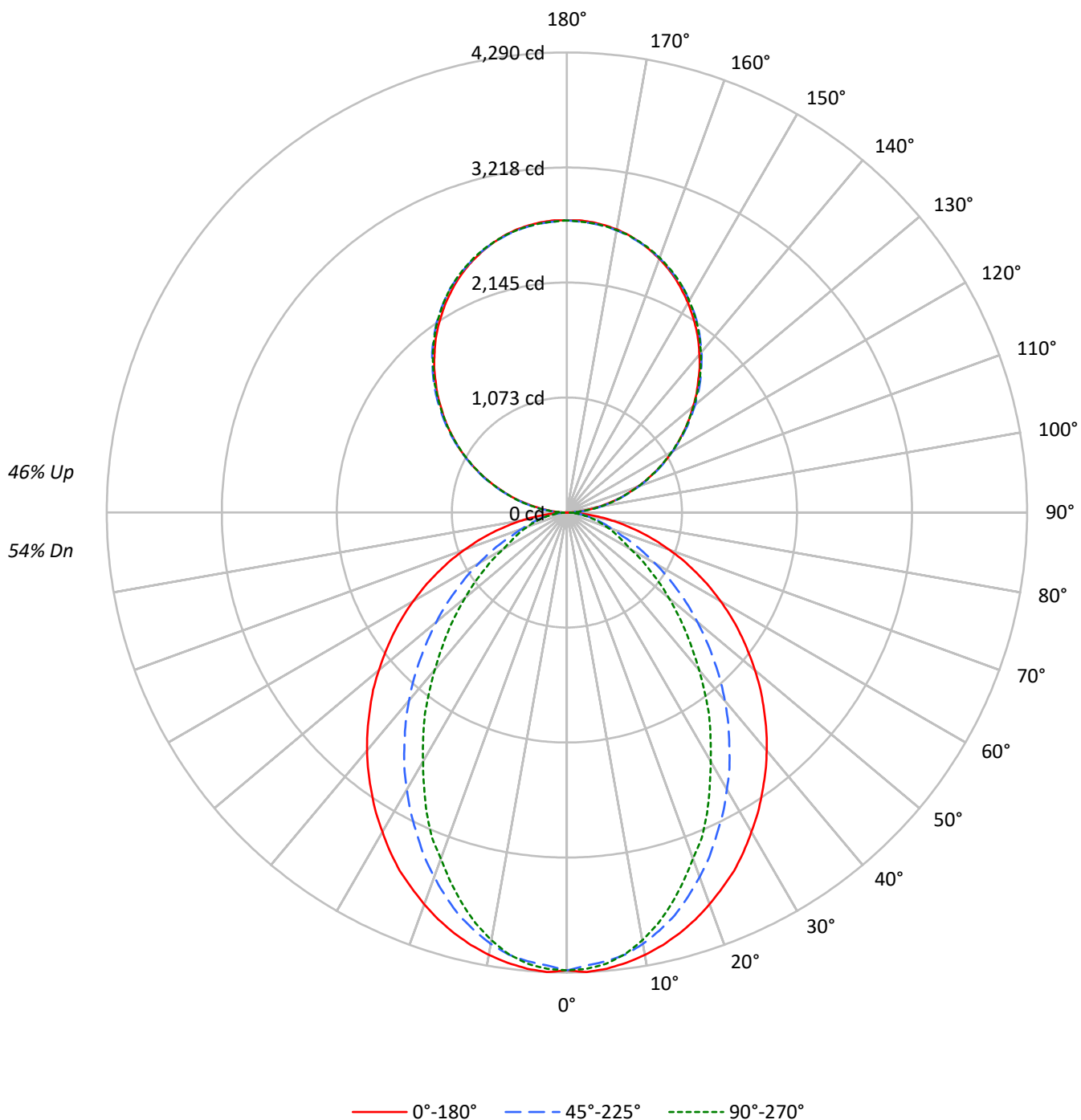
Lumens per Lamp: N/A  
Luminaire Lumens: 16402.0 lumens  
Efficiency: N/A  
Efficacy: 80.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 203.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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: P920294

CATALOG NUMBER: DFN2DIP-SQ3F0-120D100US935-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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 59 | 59 | 59 |
| 1   | 99  | 95  | 91  | 88  | 92  | 88  | 85  | 82  | 76 | 73 | 71 | 64 | 62 | 61 | 53 | 52 | 51 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 68  | 67 | 63 | 60 | 57 | 54 | 52 | 48 | 46 | 44 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 59 | 55 | 51 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 66  | 58  | 52  | 71  | 61  | 55  | 49  | 53 | 48 | 44 | 46 | 42 | 38 | 38 | 36 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 42 | 38 | 41 | 37 | 34 | 35 | 32 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 50  | 43  | 37  | 43 | 38 | 34 | 37 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 30 | 27 | 29 | 26 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 31 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 27  | 33 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 31 | 25 | 22 | 27 | 23 | 20 | 23 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4893 | 4893 | 4893 |
| 5°  | 4898 | 4812 | 4844 |
| 10° | 4846 | 4714 | 4685 |
| 15° | 4776 | 4555 | 4440 |
| 20° | 4685 | 4338 | 4140 |
| 25° | 4591 | 4094 | 3850 |
| 30° | 4467 | 3845 | 3483 |
| 35° | 4344 | 3577 | 3160 |
| 40° | 4220 | 3300 | 2791 |
| 45° | 4075 | 2993 | 2456 |
| 50° | 3925 | 2684 | 2129 |
| 55° | 3769 | 2354 | 1815 |
| 60° | 3588 | 2009 | 1492 |
| 65° | 3378 | 1659 | 1341 |
| 70° | 3125 | 1332 | 1211 |
| 75° | 2806 | 1168 | 1099 |
| 80° | 2345 | 969  | 947  |
| 85° | 1591 | 632  | 703  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4075 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 400.2   | 2.4       |
| 10°-20°   | 1098.7  | 6.7       |
| 20°-30°   | 1542.5  | 9.4       |
| 30°-40°   | 1681.4  | 10.3      |
| 40°-50°   | 1545.4  | 9.4       |
| 50°-60°   | 1213.7  | 7.4       |
| 60°-70°   | 790.0   | 4.8       |
| 70°-80°   | 406.7   | 2.5       |
| 80°-90°   | 111.5   | 0.7       |
| 90°-100°  | 168.5   | 1.0       |
| 100°-110° | 535.4   | 3.3       |
| 110°-120° | 916.2   | 5.6       |
| 120°-130° | 1204.9  | 7.3       |
| 130°-140° | 1352.5  | 8.2       |
| 140°-150° | 1326.3  | 8.1       |
| 150°-160° | 1112.6  | 6.8       |
| 160°-170° | 737.8   | 4.5       |
| 170°-180° | 257.9   | 1.6       |
| 0°-30°    | 3041.3  | 18.5      |
| 0°-40°    | 4722.7  | 28.8      |
| 0°-60°    | 7481.7  | 45.6      |
| 0°-90°    | 8789.9  | 53.6      |
| 90°-120°  | 1620.1  | 9.9       |
| 90°-150°  | 5503.8  | 33.6      |
| 90°-180°  | 7612.0  | 46.4      |
| 0°-180°   | 16402.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4270 | 4270  | 4270 | 4270  | 4270 |      |
| 5°   | 4270 | 4251  | 4200 | 4235  | 4224 | 405  |
| 15°  | 4062 | 4019  | 3888 | 3814  | 3776 | 1144 |
| 25°  | 3687 | 3563  | 3308 | 3150  | 3091 | 1696 |
| 35°  | 3177 | 2980  | 2640 | 2396  | 2311 | 1988 |
| 45°  | 2597 | 2338  | 1932 | 1658  | 1565 | 2006 |
| 55°  | 1975 | 1673  | 1256 | 1024  | 951  | 1764 |
| 65°  | 1333 | 1020  | 672  | 541   | 529  | 1322 |
| 75°  | 711  | 440   | 309  | 282   | 278  | 752  |
| 85°  | 166  | 85    | 73   | 73    | 73   | 191  |
| 90°  | 2    | 30    | 80   | 76    | 78   | 16   |
| 95°  | 120  | 143   | 147  | 147   | 143  | 133  |
| 105° | 494  | 501   | 506  | 510   | 510  | 522  |
| 115° | 920  | 932   | 928  | 926   | 920  | 909  |
| 125° | 1337 | 1358  | 1351 | 1344  | 1341 | 1195 |
| 135° | 1730 | 1755  | 1760 | 1758  | 1751 | 1337 |
| 145° | 2100 | 2116  | 2130 | 2132  | 2123 | 1312 |
| 155° | 2401 | 2408  | 2415 | 2427  | 2419 | 1105 |
| 165° | 2612 | 2610  | 2610 | 2626  | 2615 | 737  |
| 175° | 2718 | 2712  | 2707 | 2723  | 2709 | 258  |
| 180° | 2723 | 2723  | 2723 | 2723  | 2723 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4270.2 | 4270.2 | 4270.2 | 4270.2 | 4270.2 |
| 2.5°   | 4289.5 | 4270.2 | 4227.6 | 4266.5 | 4258.7 |
| 5°     | 4270.2 | 4250.9 | 4200.5 | 4235.3 | 4223.9 |
| 7.5°   | 4235.3 | 4212.3 | 4158.3 | 4173.4 | 4154.1 |
| 10°    | 4189.0 | 4162.0 | 4084.8 | 4073.0 | 4050.0 |
| 12.5°  | 4131.2 | 4096.4 | 3991.8 | 3968.9 | 3926.2 |
| 15°    | 4061.5 | 4018.9 | 3887.7 | 3814.2 | 3775.7 |
| 17.5°  | 3980.3 | 3918.4 | 3756.0 | 3671.2 | 3609.3 |
| 20°    | 3887.7 | 3810.2 | 3617.1 | 3520.7 | 3435.4 |
| 22.5°  | 3787.2 | 3698.2 | 3474.0 | 3342.7 | 3285.0 |
| 25°    | 3686.8 | 3562.9 | 3307.9 | 3149.6 | 3091.4 |
| 27.5°  | 3567.0 | 3435.4 | 3153.3 | 2971.7 | 2882.7 |
| 30°    | 3439.5 | 3292.4 | 2983.2 | 2786.4 | 2681.8 |
| 32.5°  | 3315.7 | 3137.7 | 2821.2 | 2589.2 | 2492.4 |
| 35°    | 3176.7 | 2979.5 | 2639.6 | 2396.1 | 2310.7 |
| 37.5°  | 3041.4 | 2828.6 | 2469.4 | 2202.5 | 2106.2 |
| 40°    | 2898.3 | 2666.7 | 2291.5 | 2017.2 | 1916.8 |
| 42.5°  | 2751.5 | 2504.3 | 2114.0 | 1827.8 | 1731.5 |
| 45°    | 2596.9 | 2337.9 | 1932.3 | 1657.7 | 1564.9 |
| 47.5°  | 2450.1 | 2175.9 | 1758.5 | 1483.8 | 1398.9 |
| 50°    | 2287.8 | 2013.5 | 1588.4 | 1321.5 | 1240.7 |
| 52.5°  | 2129.2 | 1839.3 | 1426.0 | 1171.0 | 1097.6 |
| 55°    | 1974.6 | 1673.3 | 1255.9 | 1024.2 | 950.8  |
| 57.5°  | 1816.3 | 1507.2 | 1105.3 | 888.9  | 827.0  |
| 60°    | 1654.0 | 1344.8 | 946.7  | 749.9  | 688.0  |
| 62.5°  | 1495.7 | 1186.5 | 811.4  | 626.1  | 595.3  |
| 65°    | 1333.3 | 1020.1 | 672.4  | 541.2  | 529.3  |
| 67.5°  | 1178.8 | 865.5  | 541.2  | 475.2  | 463.7  |
| 70°    | 1016.4 | 715.1  | 448.1  | 409.6  | 394.0  |
| 72.5°  | 861.9  | 575.7  | 374.7  | 344.0  | 336.2  |
| 75°    | 710.9  | 440.3  | 309.2  | 282.1  | 278.4  |
| 77.5°  | 560.5  | 312.8  | 243.6  | 228.0  | 220.2  |
| 80°    | 421.1  | 224.3  | 185.3  | 170.1  | 170.1  |
| 82.5°  | 293.6  | 150.8  | 127.5  | 119.7  | 119.7  |
| 85°    | 166.1  | 84.9   | 73.4   | 73.4   | 73.4   |
| 87.5°  | 61.9   | 30.7   | 30.7   | 27.0   | 27.0   |
| 90°    | 2.5    | 29.5   | 80.4   | 75.5   | 78.0   |
| 92.5°  | 50.9   | 69.0   | 71.5   | 73.9   | 73.9   |
| 95°    | 119.9  | 142.8  | 147.0  | 147.0  | 142.8  |
| 97.5°  | 199.5  | 220.8  | 229.9  | 229.9  | 229.9  |
| 100°   | 291.4  | 310.3  | 316.8  | 316.8  | 314.4  |
| 102.5° | 388.3  | 402.3  | 411.3  | 413.7  | 411.3  |
| 105°   | 494.2  | 500.8  | 505.7  | 509.8  | 509.8  |
| 107.5° | 599.3  | 609.2  | 609.2  | 610.8  | 599.3  |
| 110°   | 701.1  | 714.2  | 714.2  | 714.2  | 707.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 811.1  | 825.0  | 822.6  | 816.0  | 811.1  |
| 115°   | 919.5  | 932.5  | 928.5  | 926.0  | 919.5  |
| 117.5° | 1027.0 | 1045.1 | 1033.5 | 1027.0 | 1020.4 |
| 120°   | 1135.3 | 1153.4 | 1135.3 | 1135.3 | 1128.0 |
| 122.5° | 1233.8 | 1256.8 | 1245.3 | 1238.8 | 1233.8 |
| 125°   | 1337.3 | 1357.8 | 1351.3 | 1343.8 | 1341.4 |
| 127.5° | 1438.3 | 1463.7 | 1454.7 | 1444.8 | 1438.3 |
| 130°   | 1532.7 | 1562.2 | 1558.1 | 1553.2 | 1544.2 |
| 132.5° | 1638.6 | 1661.6 | 1663.2 | 1651.7 | 1645.1 |
| 135°   | 1729.7 | 1755.1 | 1760.1 | 1757.6 | 1751.0 |
| 137.5° | 1831.5 | 1852.0 | 1856.1 | 1854.5 | 1844.6 |
| 140°   | 1921.0 | 1941.5 | 1953.0 | 1953.0 | 1944.0 |
| 142.5° | 2012.9 | 2033.4 | 2040.0 | 2042.5 | 2033.4 |
| 145°   | 2099.9 | 2116.3 | 2129.5 | 2131.9 | 2122.9 |
| 147.5° | 2177.9 | 2198.5 | 2208.3 | 2212.4 | 2203.4 |
| 150°   | 2258.4 | 2272.3 | 2281.4 | 2288.7 | 2281.4 |
| 152.5° | 2329.8 | 2343.7 | 2355.3 | 2364.3 | 2355.3 |
| 155°   | 2401.2 | 2407.8 | 2415.2 | 2426.6 | 2419.2 |
| 157.5° | 2462.8 | 2467.7 | 2471.8 | 2488.2 | 2476.7 |
| 160°   | 2517.8 | 2522.7 | 2525.1 | 2539.1 | 2529.3 |
| 162.5° | 2568.7 | 2568.7 | 2571.1 | 2586.7 | 2575.2 |
| 165°   | 2612.2 | 2609.7 | 2609.7 | 2626.1 | 2614.7 |
| 167.5° | 2651.6 | 2644.2 | 2644.2 | 2660.7 | 2649.1 |
| 170°   | 2681.1 | 2674.6 | 2672.1 | 2688.6 | 2674.6 |
| 172.5° | 2701.6 | 2695.1 | 2692.6 | 2709.0 | 2695.1 |
| 175°   | 2718.1 | 2711.5 | 2706.6 | 2723.0 | 2709.0 |
| 177.5° | 2727.1 | 2720.6 | 2715.6 | 2729.5 | 2715.6 |
| 180°   | 2723.0 | 2723.0 | 2723.0 | 2723.0 | 2723.0 |

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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 | 12.96            | 13.82 | 13.89 | 14.76 | 15.99 | 8.92           | 9.78  | 9.85  | 10.72 | 11.95 |
|                 | 3H   | 14.63            | 15.40 | 15.58 | 16.36 | 17.60 | 10.10          | 10.87 | 11.05 | 11.83 | 13.07 |
|                 | 4H   | 15.24            | 15.97 | 16.20 | 16.93 | 18.18 | 10.55          | 11.28 | 11.51 | 12.24 | 13.49 |
|                 | 6H   | 15.66            | 16.33 | 16.63 | 17.29 | 18.56 | 10.87          | 11.54 | 11.84 | 12.50 | 13.77 |
|                 | 8H   | 15.78            | 16.42 | 16.76 | 17.40 | 18.67 | 10.96          | 11.59 | 11.93 | 12.57 | 13.84 |
|                 | 12H  | 15.85            | 16.45 | 16.83 | 17.43 | 18.71 | 11.00          | 11.60 | 11.98 | 12.58 | 13.87 |
| 4H              | 2H   | 12.98            | 13.70 | 13.94 | 14.66 | 15.92 | 9.52           | 10.24 | 10.48 | 11.20 | 12.46 |
|                 | 3H   | 14.80            | 15.41 | 15.78 | 16.40 | 17.67 | 10.86          | 11.46 | 11.83 | 12.45 | 13.72 |
|                 | 4H   | 15.49            | 16.05 | 16.48 | 17.03 | 18.32 | 11.40          | 11.96 | 12.39 | 12.94 | 14.23 |
|                 | 6H   | 16.01            | 16.48 | 17.00 | 17.49 | 18.78 | 11.82          | 12.29 | 12.81 | 13.30 | 14.59 |
|                 | 8H   | 16.18            | 16.62 | 17.18 | 17.62 | 18.93 | 11.94          | 12.39 | 12.94 | 13.39 | 14.69 |
|                 | 12H  | 16.27            | 16.67 | 17.29 | 17.69 | 19.00 | 12.01          | 12.41 | 13.02 | 13.42 | 14.73 |
| 8H              | 4H   | 15.46            | 15.91 | 16.46 | 16.90 | 18.21 | 11.68          | 12.13 | 12.68 | 13.13 | 14.43 |
|                 | 6H   | 16.02            | 16.39 | 17.04 | 17.43 | 18.73 | 12.19          | 12.56 | 13.22 | 13.60 | 14.90 |
|                 | 8H   | 16.24            | 16.56 | 17.27 | 17.59 | 18.91 | 12.38          | 12.70 | 13.41 | 13.73 | 15.05 |
|                 | 12H  | 16.37            | 16.66 | 17.41 | 17.68 | 19.05 | 12.50          | 12.78 | 13.53 | 13.80 | 15.17 |
| 12H             | 4H   | 15.42            | 15.81 | 16.43 | 16.83 | 18.14 | 11.69          | 12.09 | 12.70 | 13.10 | 14.41 |
|                 | 6H   | 16.00            | 16.32 | 17.03 | 17.35 | 18.67 | 12.24          | 12.56 | 13.27 | 13.59 | 14.91 |
|                 | 8H   | 16.22            | 16.50 | 17.25 | 17.52 | 18.89 | 12.45          | 12.73 | 13.48 | 13.75 | 15.12 |