

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: P912074

Luminaire Tested: DFN2DIP-SQ3F0-110D100US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912074  
REPORT IS A COMBINATION OF REPORTS P899984 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-110D100US850-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

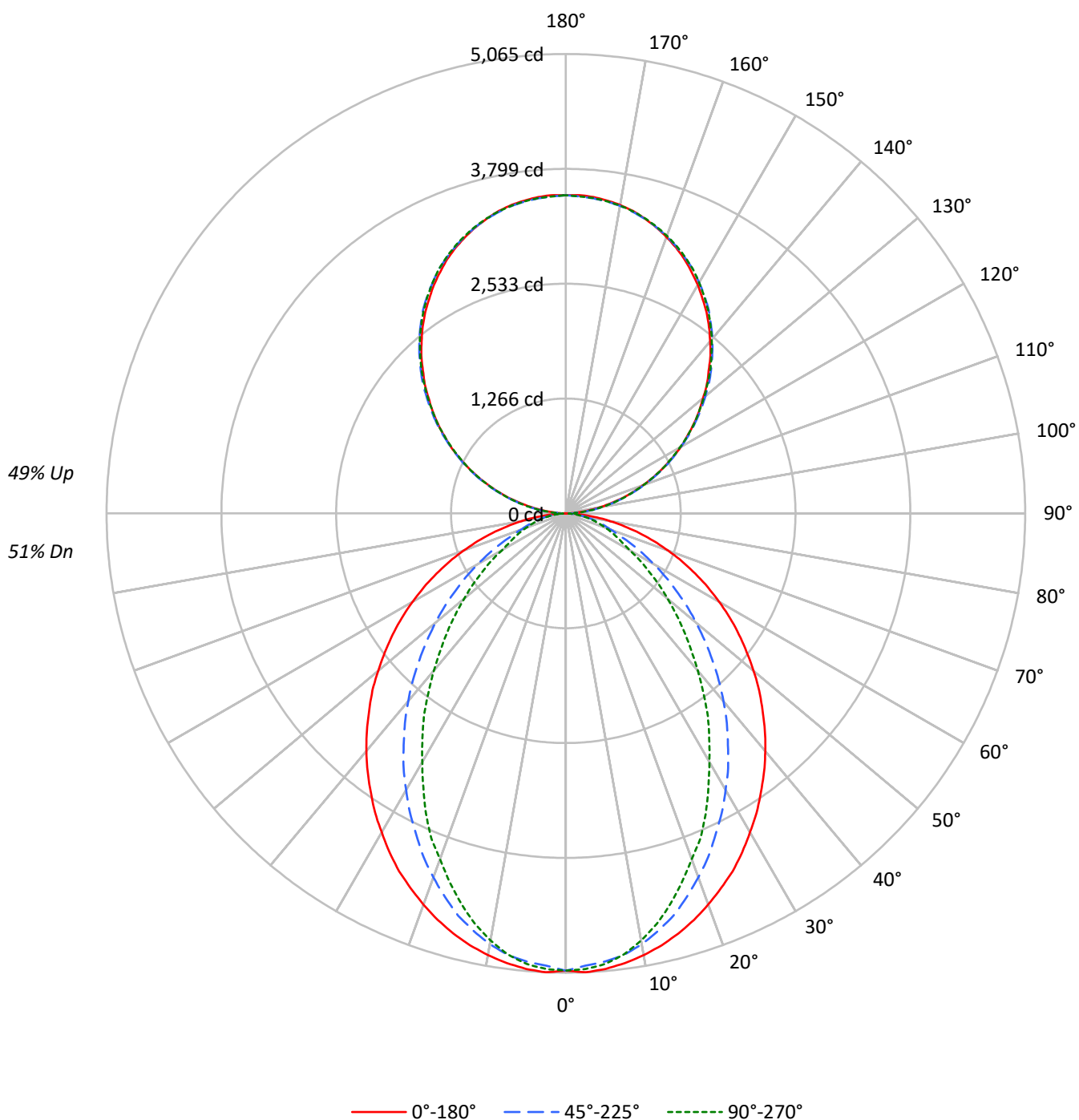
Lumens per Lamp: N/A  
Luminaire Lumens: 20183.8 lumens  
Efficiency: N/A  
Efficacy: 106.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 189.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
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: P912074

CATALOG NUMBER: DFN2DIP-SQ3F0-110D100US850-RLLFLL

**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 57 | 57 | 57 |
| 1   | 99  | 94  | 91  | 87  | 91 | 87 | 84 | 81 | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 50 | 49 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 68 | 66 | 62 | 59 | 56 | 53 | 50 | 46 | 44 | 42 |
| 3   | 83  | 73  | 66  | 61  | 76 | 68 | 62 | 57 | 59 | 54 | 50 | 50 | 46 | 43 | 41 | 39 | 37 |
| 4   | 76  | 65  | 58  | 52  | 70 | 61 | 54 | 49 | 52 | 47 | 43 | 44 | 41 | 37 | 37 | 34 | 32 |
| 5   | 70  | 58  | 51  | 45  | 64 | 55 | 48 | 42 | 47 | 42 | 38 | 40 | 36 | 33 | 34 | 31 | 28 |
| 6   | 64  | 53  | 45  | 39  | 59 | 49 | 42 | 37 | 43 | 37 | 33 | 36 | 32 | 29 | 31 | 28 | 25 |
| 7   | 60  | 48  | 40  | 34  | 55 | 45 | 38 | 33 | 39 | 33 | 29 | 33 | 29 | 26 | 28 | 25 | 23 |
| 8   | 55  | 43  | 36  | 31  | 51 | 41 | 34 | 29 | 36 | 30 | 26 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 52  | 40  | 32  | 27  | 48 | 37 | 31 | 26 | 33 | 27 | 24 | 28 | 24 | 21 | 24 | 21 | 18 |
| 10  | 48  | 37  | 29  | 25  | 45 | 34 | 28 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5777 | 5777 | 5777 |
| 5°  | 5782 | 5681 | 5720 |
| 10° | 5722 | 5566 | 5532 |
| 15° | 5639 | 5378 | 5242 |
| 20° | 5531 | 5121 | 4888 |
| 25° | 5421 | 4834 | 4545 |
| 30° | 5274 | 4539 | 4112 |
| 35° | 5129 | 4223 | 3731 |
| 40° | 4982 | 3896 | 3295 |
| 45° | 4812 | 3534 | 2900 |
| 50° | 4635 | 3169 | 2514 |
| 55° | 4450 | 2779 | 2143 |
| 60° | 4236 | 2372 | 1762 |
| 65° | 3989 | 1959 | 1583 |
| 70° | 3689 | 1573 | 1430 |
| 75° | 3313 | 1378 | 1297 |
| 80° | 2768 | 1144 | 1119 |
| 85° | 1878 | 745  | 829  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4812 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 472.5   | 2.3       |
| 10°-20°   | 1297.2  | 6.4       |
| 20°-30°   | 1821.2  | 9.0       |
| 30°-40°   | 1985.2  | 9.8       |
| 40°-50°   | 1824.6  | 9.0       |
| 50°-60°   | 1433.0  | 7.1       |
| 60°-70°   | 932.7   | 4.6       |
| 70°-80°   | 480.1   | 2.4       |
| 80°-90°   | 132.5   | 0.7       |
| 90°-100°  | 217.0   | 1.1       |
| 100°-110° | 689.6   | 3.4       |
| 110°-120° | 1180.1  | 5.8       |
| 120°-130° | 1552.0  | 7.7       |
| 130°-140° | 1742.1  | 8.6       |
| 140°-150° | 1708.3  | 8.5       |
| 150°-160° | 1433.0  | 7.1       |
| 160°-170° | 950.4   | 4.7       |
| 170°-180° | 332.2   | 1.6       |
| 0°-30°    | 3590.9  | 17.8      |
| 0°-40°    | 5576.1  | 27.6      |
| 0°-60°    | 8833.7  | 43.8      |
| 0°-90°    | 10379.1 | 51.4      |
| 90°-120°  | 2086.7  | 10.3      |
| 90°-150°  | 7089.1  | 35.1      |
| 90°-180°  | 9805.0  | 48.6      |
| 0°-180°   | 20183.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5042 | 5042  | 5042 | 5042  | 5042 |      |
| 5°   | 5042 | 5019  | 4960 | 5001  | 4987 | 478  |
| 15°  | 4795 | 4745  | 4590 | 4504  | 4458 | 1351 |
| 25°  | 4353 | 4207  | 3906 | 3719  | 3650 | 2002 |
| 35°  | 3751 | 3518  | 3117 | 2829  | 2728 | 2348 |
| 45°  | 3066 | 2760  | 2282 | 1957  | 1848 | 2368 |
| 55°  | 2331 | 1976  | 1483 | 1209  | 1123 | 2083 |
| 65°  | 1574 | 1204  | 794  | 639   | 625  | 1561 |
| 75°  | 839  | 520   | 365  | 333   | 329  | 888  |
| 85°  | 196  | 100   | 87   | 87    | 87   | 225  |
| 90°  | 3    | 38    | 104  | 97    | 100  | 20   |
| 95°  | 154  | 184   | 189  | 189   | 184  | 172  |
| 105° | 637  | 645   | 651  | 657   | 657  | 672  |
| 115° | 1184 | 1201  | 1196 | 1193  | 1184 | 1171 |
| 125° | 1722 | 1749  | 1740 | 1731  | 1728 | 1539 |
| 135° | 2228 | 2261  | 2267 | 2264  | 2255 | 1722 |
| 145° | 2705 | 2726  | 2743 | 2746  | 2734 | 1690 |
| 155° | 3093 | 3101  | 3111 | 3126  | 3116 | 1424 |
| 165° | 3365 | 3361  | 3361 | 3383  | 3368 | 949  |
| 175° | 3501 | 3493  | 3486 | 3507  | 3489 | 333  |
| 180° | 3507 | 3507  | 3507 | 3507  | 3507 |      |

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CATALOG NUMBER: DFN2DIP-SQ3F0-110D100US850-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 5041.8 | 5041.8 | 5041.8 | 5041.8 | 5041.8 |
| 2.5°   | 5064.6 | 5041.8 | 4991.5 | 5037.5 | 5028.3 |
| 5°     | 5041.8 | 5019.1 | 4959.6 | 5000.7 | 4987.2 |
| 7.5°   | 5000.7 | 4973.5 | 4909.7 | 4927.6 | 4904.8 |
| 10°    | 4946.0 | 4914.0 | 4823.0 | 4809.0 | 4781.9 |
| 12.5°  | 4877.7 | 4836.6 | 4713.1 | 4686.0 | 4635.6 |
| 15°    | 4795.4 | 4745.1 | 4590.2 | 4503.5 | 4458.0 |
| 17.5°  | 4699.6 | 4626.5 | 4434.8 | 4334.5 | 4261.4 |
| 20°    | 4590.2 | 4498.7 | 4270.6 | 4156.9 | 4056.2 |
| 22.5°  | 4471.6 | 4366.5 | 4101.7 | 3946.8 | 3878.5 |
| 25°    | 4352.9 | 4206.8 | 3905.7 | 3718.8 | 3650.1 |
| 27.5°  | 4211.6 | 4056.2 | 3723.1 | 3508.7 | 3403.6 |
| 30°    | 4061.0 | 3887.3 | 3522.3 | 3289.8 | 3166.4 |
| 32.5°  | 3914.9 | 3704.7 | 3331.0 | 3057.1 | 2942.8 |
| 35°    | 3750.7 | 3517.9 | 3116.6 | 2829.1 | 2728.4 |
| 37.5°  | 3591.1 | 3339.8 | 2915.7 | 2600.5 | 2486.8 |
| 40°    | 3422.0 | 3148.6 | 2705.6 | 2381.7 | 2263.1 |
| 42.5°  | 3248.7 | 2956.8 | 2496.0 | 2158.1 | 2044.3 |
| 45°    | 3066.3 | 2760.3 | 2281.5 | 1957.2 | 1847.8 |
| 47.5°  | 2892.9 | 2569.1 | 2076.3 | 1751.9 | 1651.7 |
| 50°    | 2701.2 | 2377.4 | 1875.4 | 1560.3 | 1464.9 |
| 52.5°  | 2513.9 | 2171.6 | 1683.7 | 1382.6 | 1295.9 |
| 55°    | 2331.3 | 1975.6 | 1482.7 | 1209.3 | 1122.6 |
| 57.5°  | 2144.6 | 1779.5 | 1305.1 | 1049.6 | 976.4  |
| 60°    | 1952.8 | 1587.9 | 1117.8 | 885.4  | 812.3  |
| 62.5°  | 1766.0 | 1401.0 | 958.1  | 739.3  | 702.9  |
| 65°    | 1574.2 | 1204.4 | 793.9  | 639.0  | 624.9  |
| 67.5°  | 1391.8 | 1021.9 | 639.0  | 561.0  | 547.5  |
| 70°    | 1200.0 | 844.3  | 529.1  | 483.6  | 465.2  |
| 72.5°  | 1017.5 | 679.7  | 442.5  | 406.1  | 396.9  |
| 75°    | 839.4  | 519.9  | 365.0  | 333.0  | 328.7  |
| 77.5°  | 661.7  | 369.4  | 287.6  | 269.2  | 259.9  |
| 80°    | 497.2  | 264.8  | 218.8  | 201.0  | 201.0  |
| 82.5°  | 346.6  | 178.1  | 150.6  | 141.4  | 141.4  |
| 85°    | 196.1  | 100.3  | 86.6   | 86.6   | 86.6   |
| 87.5°  | 73.1   | 36.3   | 36.3   | 31.9   | 31.9   |
| 90°    | 3.2    | 38.0   | 103.6  | 97.3   | 100.5  |
| 92.5°  | 65.5   | 88.8   | 92.0   | 95.2   | 95.2   |
| 95°    | 154.4  | 184.0  | 189.3  | 189.3  | 184.0  |
| 97.5°  | 257.0  | 284.5  | 296.1  | 296.1  | 296.1  |
| 100°   | 375.4  | 399.7  | 408.1  | 408.1  | 405.0  |
| 102.5° | 500.2  | 518.1  | 529.8  | 532.9  | 529.8  |
| 105°   | 636.6  | 645.0  | 651.3  | 656.6  | 656.6  |
| 107.5° | 771.9  | 784.6  | 784.6  | 786.7  | 771.9  |
| 110°   | 903.1  | 919.9  | 919.9  | 919.9  | 911.5  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1044.7 | 1062.6 | 1059.5 | 1051.0 | 1044.7 |
| 115°   | 1184.3 | 1201.2 | 1195.9 | 1192.7 | 1184.3 |
| 117.5° | 1322.8 | 1346.1 | 1331.2 | 1322.8 | 1314.3 |
| 120°   | 1462.3 | 1485.6 | 1462.3 | 1462.3 | 1452.9 |
| 122.5° | 1589.2 | 1618.8 | 1604.1 | 1595.6 | 1589.2 |
| 125°   | 1722.5 | 1748.9 | 1740.5 | 1730.9 | 1727.8 |
| 127.5° | 1852.6 | 1885.3 | 1873.7 | 1861.0 | 1852.6 |
| 130°   | 1974.1 | 2012.2 | 2007.0 | 2000.5 | 1989.0 |
| 132.5° | 2110.5 | 2140.1 | 2142.3 | 2127.5 | 2119.0 |
| 135°   | 2227.9 | 2260.7 | 2267.0 | 2263.9 | 2255.4 |
| 137.5° | 2359.1 | 2385.5 | 2390.8 | 2388.7 | 2375.9 |
| 140°   | 2474.3 | 2500.7 | 2515.5 | 2515.5 | 2503.9 |
| 142.5° | 2592.7 | 2619.1 | 2627.6 | 2630.8 | 2619.1 |
| 145°   | 2704.7 | 2725.9 | 2742.9 | 2746.0 | 2734.4 |
| 147.5° | 2805.2 | 2831.7 | 2844.4 | 2849.7 | 2838.0 |
| 150°   | 2908.9 | 2926.9 | 2938.5 | 2947.9 | 2938.5 |
| 152.5° | 3000.8 | 3018.8 | 3033.7 | 3045.3 | 3033.7 |
| 155°   | 3092.9 | 3101.3 | 3110.9 | 3125.6 | 3116.1 |
| 157.5° | 3172.2 | 3178.5 | 3183.8 | 3204.9 | 3190.1 |
| 160°   | 3243.0 | 3249.4 | 3252.5 | 3270.4 | 3257.8 |
| 162.5° | 3308.6 | 3308.6 | 3311.7 | 3331.8 | 3317.0 |
| 165°   | 3364.6 | 3361.4 | 3361.4 | 3382.6 | 3367.8 |
| 167.5° | 3415.4 | 3405.8 | 3405.8 | 3427.0 | 3412.2 |
| 170°   | 3453.4 | 3445.0 | 3441.8 | 3463.0 | 3445.0 |
| 172.5° | 3479.8 | 3471.4 | 3468.2 | 3489.4 | 3471.4 |
| 175°   | 3501.0 | 3492.6 | 3486.3 | 3507.3 | 3489.4 |
| 177.5° | 3512.6 | 3504.2 | 3497.8 | 3515.8 | 3497.8 |
| 180°   | 3507.3 | 3507.3 | 3507.3 | 3507.3 | 3507.3 |



TEST NUMBER: P912074

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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 | 13.34            | 14.18 | 14.29 | 15.14 | 16.40 | 9.30           | 10.14 | 10.25 | 11.10 | 12.36 |
|                 | 3H   | 15.01            | 15.76 | 15.97 | 16.74 | 18.01 | 10.48          | 11.23 | 11.44 | 12.21 | 13.48 |
|                 | 4H   | 15.62            | 16.33 | 16.59 | 17.31 | 18.59 | 10.93          | 11.64 | 11.90 | 12.62 | 13.90 |
|                 | 6H   | 16.04            | 16.69 | 17.02 | 17.67 | 18.97 | 11.24          | 11.90 | 12.23 | 12.88 | 14.18 |
|                 | 8H   | 16.16            | 16.78 | 17.15 | 17.78 | 19.08 | 11.33          | 11.95 | 12.33 | 12.95 | 14.25 |
|                 | 12H  | 16.22            | 16.81 | 17.22 | 17.80 | 19.12 | 11.37          | 11.96 | 12.37 | 12.96 | 14.27 |
| 4H              | 2H   | 13.36            | 14.07 | 14.34 | 15.04 | 16.33 | 9.89           | 10.60 | 10.88 | 11.58 | 12.87 |
|                 | 3H   | 15.18            | 15.77 | 16.17 | 16.78 | 18.08 | 11.24          | 11.83 | 12.23 | 12.83 | 14.13 |
|                 | 4H   | 15.87            | 16.41 | 16.87 | 17.41 | 18.73 | 11.78          | 12.32 | 12.78 | 13.32 | 14.64 |
|                 | 6H   | 16.38            | 16.84 | 17.39 | 17.87 | 19.19 | 12.19          | 12.66 | 13.20 | 13.68 | 15.00 |
|                 | 8H   | 16.55            | 16.99 | 17.57 | 18.00 | 19.34 | 12.32          | 12.75 | 13.33 | 13.77 | 15.10 |
|                 | 12H  | 16.65            | 17.04 | 17.68 | 18.07 | 19.41 | 12.38          | 12.77 | 13.41 | 13.80 | 15.14 |
| 8H              | 4H   | 15.84            | 16.27 | 16.85 | 17.28 | 18.62 | 12.06          | 12.49 | 13.07 | 13.51 | 14.84 |
|                 | 6H   | 16.40            | 16.76 | 17.43 | 17.81 | 19.14 | 12.57          | 12.93 | 13.61 | 13.98 | 15.32 |
|                 | 8H   | 16.61            | 16.93 | 17.66 | 17.97 | 19.32 | 12.75          | 13.07 | 13.80 | 14.11 | 15.46 |
|                 | 12H  | 16.75            | 17.02 | 17.79 | 18.06 | 19.46 | 12.87          | 13.15 | 13.92 | 14.18 | 15.58 |
| 12H             | 4H   | 15.79            | 16.18 | 16.82 | 17.21 | 18.55 | 12.06          | 12.45 | 13.09 | 13.48 | 14.82 |
|                 | 6H   | 16.37            | 16.69 | 17.42 | 17.73 | 19.08 | 12.62          | 12.93 | 13.66 | 13.97 | 15.33 |
|                 | 8H   | 16.59            | 16.87 | 17.64 | 17.90 | 19.30 | 12.82          | 13.10 | 13.87 | 14.14 | 15.53 |