

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: P906581

Luminaire Tested: DFN2DIP-SQ3F0-100D100US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906581  
REPORT IS A COMBINATION OF REPORTS P901501 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-100D100US835-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

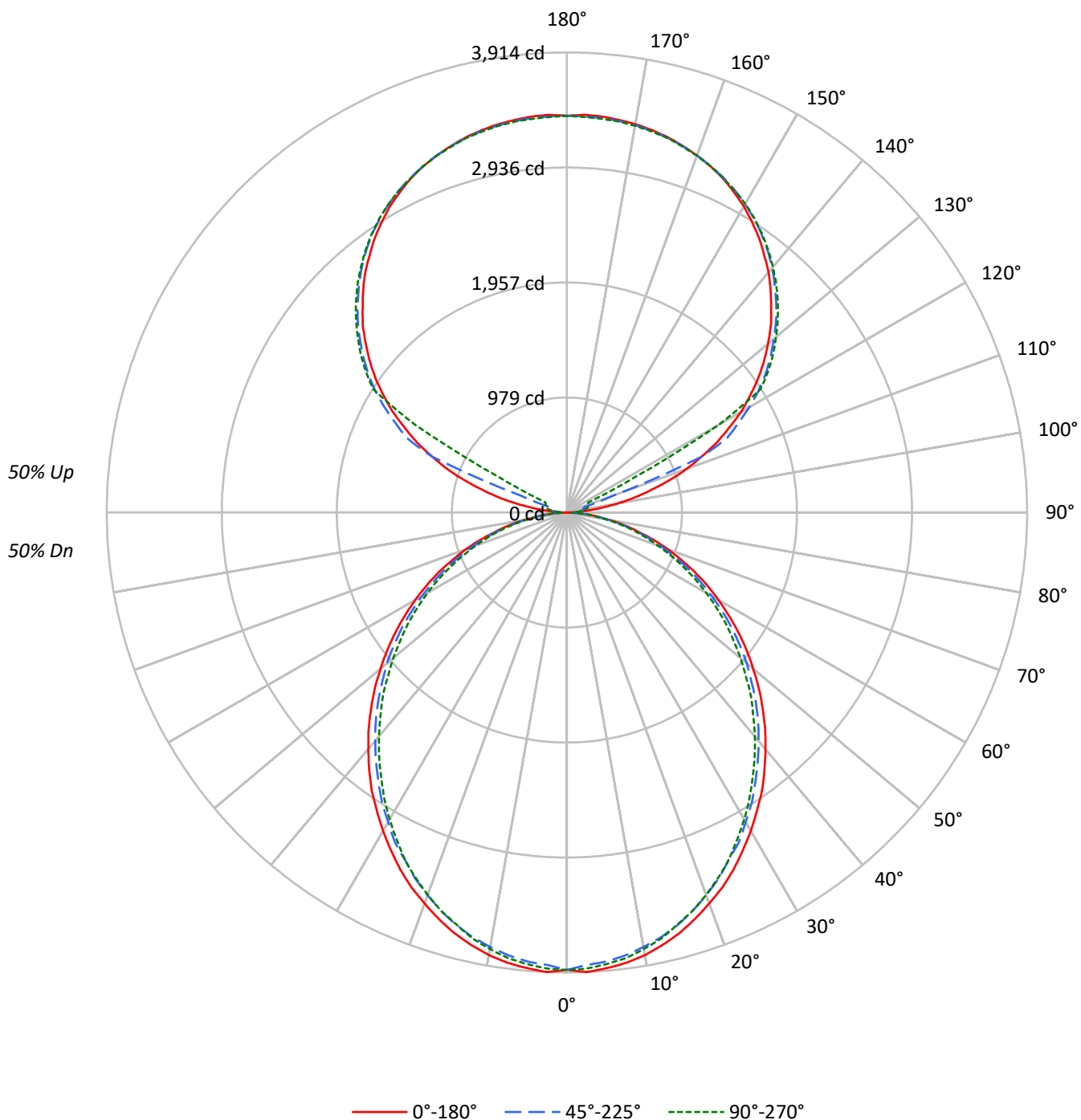
Lumens per Lamp: N/A  
Luminaire Lumens: 19800.0 lumens  
Efficiency: N/A  
Efficacy: 112.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 176  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 93  | 90  | 86  | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 |
| 2   | 89  | 82  | 75  | 70  | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 |
| 3   | 81  | 72  | 64  | 59  | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 |
| 5   | 68  | 57  | 48  | 42  | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 |
| 8   | 54  | 42  | 34  | 29  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4458 | 4458 | 4458 |
| 5°  | 4463 | 4393 | 4424 |
| 10° | 4424 | 4331 | 4363 |
| 15° | 4356 | 4257 | 4268 |
| 20° | 4265 | 4155 | 4171 |
| 25° | 4175 | 4034 | 4059 |
| 30° | 4062 | 3920 | 3916 |
| 35° | 3955 | 3787 | 3766 |
| 40° | 3824 | 3653 | 3623 |
| 45° | 3693 | 3518 | 3476 |
| 50° | 3550 | 3376 | 3306 |
| 55° | 3400 | 3212 | 3150 |
| 60° | 3230 | 3017 | 2970 |
| 65° | 3044 | 2816 | 2759 |
| 70° | 2807 | 2569 | 2531 |
| 75° | 2480 | 2274 | 2319 |
| 80° | 2084 | 1897 | 1917 |
| 85° | 1467 | 1258 | 1254 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3693 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 366.2   | 1.8       |
| 10°-20°   | 1030.4  | 5.2       |
| 20°-30°   | 1514.3  | 7.6       |
| 30°-40°   | 1758.8  | 8.9       |
| 40°-50°   | 1756.6  | 8.9       |
| 50°-60°   | 1531.7  | 7.7       |
| 60°-70°   | 1132.3  | 5.7       |
| 70°-80°   | 640.6   | 3.2       |
| 80°-90°   | 175.0   | 0.9       |
| 90°-100°  | 111.3   | 0.6       |
| 100°-110° | 414.9   | 2.1       |
| 110°-120° | 1100.3  | 5.6       |
| 120°-130° | 1824.9  | 9.2       |
| 130°-140° | 1938.4  | 9.8       |
| 140°-150° | 1801.5  | 9.1       |
| 150°-160° | 1448.4  | 7.3       |
| 160°-170° | 933.3   | 4.7       |
| 170°-180° | 321.2   | 1.6       |
| 0°-30°    | 2911.0  | 14.7      |
| 0°-40°    | 4669.7  | 23.6      |
| 0°-60°    | 7958.0  | 40.2      |
| 0°-90°    | 9905.9  | 50.0      |
| 90°-120°  | 1626.4  | 8.2       |
| 90°-150°  | 7191.2  | 36.3      |
| 90°-180°  | 9894.0  | 50.0      |
| 0°-180°   | 19800.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3891 | 3891  | 3891 | 3891  | 3891 |      |
| 5°   | 3891 | 3876  | 3835 | 3865  | 3858 | 369  |
| 15°  | 3704 | 3682  | 3633 | 3648  | 3630 | 1043 |
| 25°  | 3352 | 3323  | 3259 | 3266  | 3259 | 1543 |
| 35°  | 2892 | 2855  | 2795 | 2772  | 2754 | 1806 |
| 45°  | 2354 | 2327  | 2271 | 2230  | 2215 | 1816 |
| 55°  | 1781 | 1759  | 1714 | 1669  | 1650 | 1592 |
| 65°  | 1201 | 1179  | 1141 | 1108  | 1089 | 1188 |
| 75°  | 628  | 621   | 602  | 580   | 588  | 671  |
| 85°  | 153  | 150   | 146  | 135   | 131  | 171  |
| 90°  | 2    | 29    | 49   | 61    | 66   | 18   |
| 95°  | 159  | 78    | 95   | 108   | 105  | 188  |
| 105° | 742  | 816   | 149  | 176   | 186  | 793  |
| 115° | 1404 | 1446  | 1507 | 376   | 200  | 1382 |
| 125° | 1985 | 2017  | 2064 | 2081  | 2088 | 1771 |
| 135° | 2457 | 2496  | 2518 | 2542  | 2537 | 1898 |
| 145° | 2850 | 2847  | 2889 | 2906  | 2894 | 1782 |
| 155° | 3138 | 3116  | 3146 | 3160  | 3141 | 1446 |
| 165° | 3306 | 3292  | 3299 | 3316  | 3299 | 934  |
| 175° | 3382 | 3365  | 3370 | 3387  | 3363 | 322  |
| 180° | 3375 | 3375  | 3375 | 3375  | 3375 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3891.1 | 3891.1 | 3891.1 | 3891.1 | 3891.1 |
| 2.5°   | 3913.7 | 3895.0 | 3853.7 | 3891.1 | 3883.9 |
| 5°     | 3891.1 | 3876.4 | 3835.1 | 3864.9 | 3857.7 |
| 7.5°   | 3864.9 | 3842.6 | 3801.3 | 3831.5 | 3824.0 |
| 10°    | 3824.0 | 3797.8 | 3752.9 | 3782.7 | 3771.6 |
| 12.5°  | 3767.6 | 3745.4 | 3700.5 | 3719.2 | 3711.6 |
| 15°    | 3704.1 | 3681.9 | 3633.0 | 3648.1 | 3629.5 |
| 17.5°  | 3625.5 | 3603.3 | 3554.4 | 3573.1 | 3554.4 |
| 20°    | 3539.3 | 3517.1 | 3464.7 | 3475.8 | 3461.1 |
| 22.5°  | 3453.6 | 3419.9 | 3371.0 | 3371.0 | 3363.5 |
| 25°    | 3352.4 | 3322.6 | 3259.1 | 3266.2 | 3259.1 |
| 27.5°  | 3240.0 | 3213.8 | 3165.4 | 3154.3 | 3135.6 |
| 30°    | 3128.1 | 3097.9 | 3041.9 | 3030.8 | 3015.7 |
| 32.5°  | 3008.2 | 2986.0 | 2926.0 | 2903.4 | 2888.3 |
| 35°    | 2892.3 | 2855.0 | 2795.0 | 2772.4 | 2753.7 |
| 37.5°  | 2761.3 | 2727.5 | 2667.6 | 2641.4 | 2622.7 |
| 40°    | 2626.7 | 2596.5 | 2536.6 | 2503.3 | 2488.2 |
| 42.5°  | 2495.7 | 2465.5 | 2406.0 | 2368.3 | 2346.1 |
| 45°    | 2353.6 | 2327.4 | 2271.0 | 2230.1 | 2215.1 |
| 47.5°  | 2215.1 | 2188.9 | 2128.9 | 2087.6 | 2065.4 |
| 50°    | 2069.0 | 2050.3 | 1997.9 | 1945.5 | 1926.9 |
| 52.5°  | 1926.9 | 1900.7 | 1852.2 | 1811.0 | 1784.8 |
| 55°    | 1781.2 | 1758.6 | 1713.7 | 1668.8 | 1650.2 |
| 57.5°  | 1635.1 | 1616.4 | 1567.6 | 1522.8 | 1507.7 |
| 60°    | 1489.0 | 1474.3 | 1421.9 | 1380.6 | 1369.5 |
| 62.5°  | 1346.9 | 1320.7 | 1283.4 | 1246.1 | 1231.0 |
| 65°    | 1201.2 | 1178.6 | 1141.3 | 1107.5 | 1088.9 |
| 67.5°  | 1051.6 | 1032.5 | 999.2  | 973.0  | 957.9  |
| 70°    | 913.0  | 897.9  | 864.2  | 838.0  | 823.3  |
| 72.5°  | 770.9  | 755.8  | 737.2  | 711.0  | 699.8  |
| 75°    | 628.4  | 621.3  | 602.2  | 580.0  | 587.5  |
| 77.5°  | 501.4  | 486.3  | 478.7  | 467.6  | 456.5  |
| 80°    | 374.3  | 370.4  | 362.8  | 351.7  | 344.2  |
| 82.5°  | 254.5  | 254.5  | 250.9  | 235.8  | 235.8  |
| 85°    | 153.2  | 149.7  | 146.1  | 134.6  | 131.0  |
| 87.5°  | 67.5   | 59.9   | 52.4   | 41.3   | 37.3   |
| 90°    | 2.3    | 29.3   | 48.7   | 61.2   | 65.8   |
| 92.5°  | 61.2   | 51.3   | 58.6   | 63.5   | 65.8   |
| 95°    | 158.6  | 78.0   | 95.1   | 107.6  | 105.0  |
| 97.5°  | 285.6  | 85.5   | 124.4  | 131.9  | 134.3  |
| 100°   | 432.4  | 97.7   | 139.2  | 158.6  | 163.6  |
| 102.5° | 593.3  | 588.7  | 144.1  | 170.8  | 178.3  |
| 105°   | 742.4  | 815.7  | 149.1  | 175.7  | 185.6  |
| 107.5° | 915.8  | 976.7  | 154.0  | 180.7  | 190.5  |
| 110°   | 1081.9 | 1133.0 | 427.4  | 183.3  | 192.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1238.2 | 1282.0 | 1240.6 | 187.9  | 195.5  |
| 115°   | 1404.1 | 1445.6 | 1506.8 | 376.1  | 200.4  |
| 117.5° | 1548.2 | 1597.0 | 1638.7 | 1289.3 | 649.6  |
| 120°   | 1709.5 | 1746.0 | 1790.1 | 1819.4 | 1489.7 |
| 122.5° | 1846.1 | 1885.2 | 1934.2 | 1948.7 | 1951.3 |
| 125°   | 1985.3 | 2017.2 | 2063.6 | 2080.7 | 2087.9 |
| 127.5° | 2112.3 | 2146.5 | 2183.3 | 2207.7 | 2210.0 |
| 130°   | 2232.0 | 2271.2 | 2297.9 | 2324.8 | 2322.5 |
| 132.5° | 2354.1 | 2386.0 | 2412.7 | 2434.7 | 2432.4 |
| 135°   | 2456.8 | 2495.9 | 2517.7 | 2542.3 | 2537.4 |
| 137.5° | 2564.1 | 2593.4 | 2618.0 | 2642.4 | 2635.1 |
| 140°   | 2669.0 | 2688.8 | 2715.4 | 2737.5 | 2725.3 |
| 142.5° | 2757.2 | 2774.3 | 2805.9 | 2825.3 | 2813.2 |
| 145°   | 2850.0 | 2847.4 | 2888.9 | 2906.0 | 2893.8 |
| 147.5° | 2930.3 | 2923.1 | 2964.5 | 2976.7 | 2967.2 |
| 150°   | 3008.6 | 2991.5 | 3030.7 | 3045.2 | 3033.0 |
| 152.5° | 3074.4 | 3055.0 | 3091.6 | 3106.3 | 3089.2 |
| 155°   | 3138.0 | 3116.2 | 3145.5 | 3160.0 | 3140.6 |
| 157.5° | 3189.3 | 3169.9 | 3191.9 | 3209.0 | 3189.3 |
| 160°   | 3233.4 | 3218.6 | 3233.4 | 3247.9 | 3230.8 |
| 162.5° | 3272.2 | 3257.7 | 3269.9 | 3287.0 | 3265.0 |
| 165°   | 3306.4 | 3291.9 | 3299.2 | 3316.3 | 3299.2 |
| 167.5° | 3333.4 | 3318.6 | 3326.2 | 3343.3 | 3321.2 |
| 170°   | 3355.4 | 3340.7 | 3345.6 | 3362.7 | 3340.7 |
| 172.5° | 3369.9 | 3355.4 | 3360.4 | 3377.5 | 3355.4 |
| 175°   | 3382.1 | 3365.0 | 3369.9 | 3387.1 | 3362.7 |
| 177.5° | 3387.1 | 3369.9 | 3372.6 | 3389.7 | 3367.6 |
| 180°   | 3374.9 | 3374.9 | 3374.9 | 3374.9 | 3374.9 |

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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 | 12.43            | 13.30 | 13.39 | 14.27 | 15.54 | 11.99          | 12.85 | 12.95 | 13.82 | 15.09 |
|                 | 3H   | 14.09            | 14.86 | 15.06 | 15.84 | 17.14 | 13.60          | 14.37 | 14.57 | 15.35 | 16.65 |
|                 | 4H   | 14.67            | 15.41 | 15.66 | 16.39 | 17.69 | 14.18          | 14.91 | 15.16 | 15.90 | 17.20 |
|                 | 6H   | 15.07            | 15.75 | 16.06 | 16.74 | 18.05 | 14.57          | 15.24 | 15.56 | 16.24 | 17.55 |
|                 | 8H   | 15.17            | 15.82 | 16.17 | 16.82 | 18.13 | 14.67          | 15.31 | 15.67 | 16.32 | 17.63 |
|                 | 12H  | 15.22            | 15.83 | 16.22 | 16.83 | 18.17 | 14.71          | 15.32 | 15.72 | 16.32 | 17.66 |
| 4H              | 2H   | 12.89            | 13.62 | 13.88 | 14.61 | 15.91 | 12.54          | 13.27 | 13.52 | 14.25 | 15.56 |
|                 | 3H   | 14.75            | 15.36 | 15.75 | 16.38 | 17.69 | 14.34          | 14.95 | 15.34 | 15.97 | 17.28 |
|                 | 4H   | 15.46            | 16.02 | 16.47 | 17.03 | 18.37 | 15.04          | 15.60 | 16.04 | 16.60 | 17.94 |
|                 | 6H   | 15.97            | 16.45 | 16.99 | 17.48 | 18.82 | 15.54          | 16.02 | 16.56 | 17.05 | 18.39 |
|                 | 8H   | 16.12            | 16.57 | 17.14 | 17.59 | 18.94 | 15.68          | 16.13 | 16.70 | 17.16 | 18.51 |
|                 | 12H  | 16.19            | 16.60 | 17.23 | 17.64 | 18.99 | 15.74          | 16.15 | 16.78 | 17.19 | 18.54 |
| 8H              | 4H   | 15.66            | 16.10 | 16.67 | 17.13 | 18.48 | 15.28          | 15.73 | 16.30 | 16.75 | 18.10 |
|                 | 6H   | 16.28            | 16.65 | 17.32 | 17.72 | 19.07 | 15.90          | 16.27 | 16.94 | 17.33 | 18.68 |
|                 | 8H   | 16.50            | 16.82 | 17.55 | 17.88 | 19.24 | 16.10          | 16.43 | 17.15 | 17.48 | 18.85 |
|                 | 12H  | 16.63            | 16.91 | 17.68 | 17.96 | 19.37 | 16.22          | 16.50 | 17.27 | 17.55 | 18.96 |
| 12H             | 4H   | 15.64            | 16.05 | 16.68 | 17.08 | 18.44 | 15.27          | 15.68 | 16.31 | 16.72 | 18.07 |
|                 | 6H   | 16.31            | 16.64 | 17.36 | 17.69 | 19.05 | 15.94          | 16.26 | 16.99 | 17.31 | 18.68 |
|                 | 8H   | 16.55            | 16.83 | 17.60 | 17.88 | 19.29 | 16.17          | 16.45 | 17.22 | 17.50 | 18.91 |