

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: P917476

Luminaire Tested: DFN2DIP-SQ3F0-100D060US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917476  
REPORT IS A COMBINATION OF REPORTS P899909 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-100D060US930-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

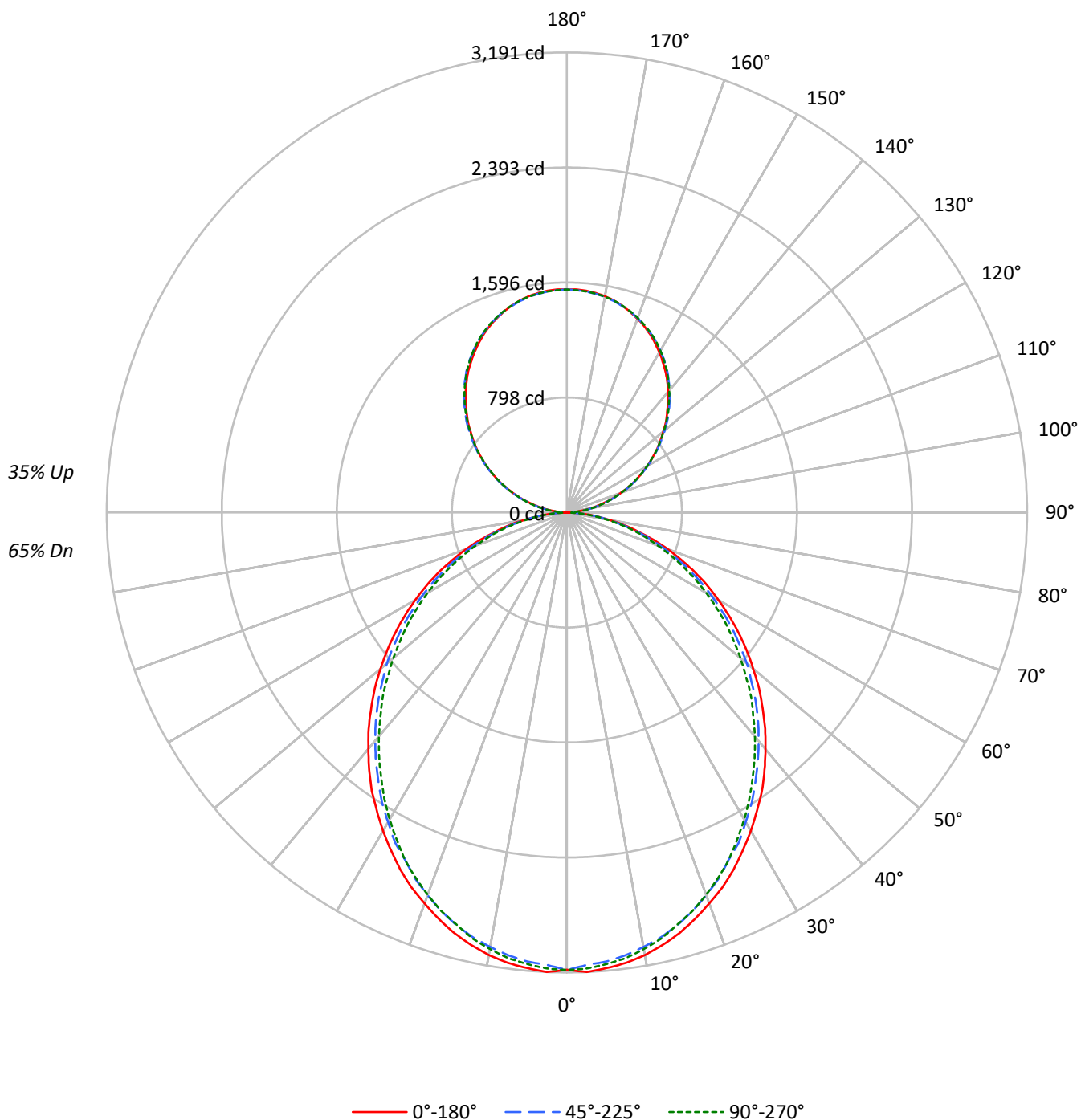
Lumens per Lamp: N/A  
Luminaire Lumens: 12400.7 lumens  
Efficiency: N/A  
Efficacy: 86.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 143.6  
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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CATALOG NUMBER: DFN2DIP-SQ3F0-100D060US930-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P917476

CATALOG NUMBER: DFN2DIP-SQ3F0-100D060US930-FLLFL

**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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 80 | 80 | 80 | 70 | 70 | 70 |
| 1   | 101 | 97  | 93  | 89  | 95  | 91  | 88  | 84  | 81 | 78 | 75 | 71 | 69 | 67 | 62 | 60 | 59 |
| 2   | 92  | 85  | 78  | 73  | 86  | 80  | 74  | 69  | 71 | 66 | 63 | 62 | 59 | 56 | 55 | 52 | 50 |
| 3   | 84  | 74  | 67  | 61  | 79  | 70  | 63  | 58  | 62 | 57 | 53 | 55 | 51 | 47 | 48 | 45 | 42 |
| 4   | 77  | 66  | 58  | 52  | 72  | 62  | 55  | 49  | 55 | 50 | 45 | 49 | 44 | 41 | 43 | 40 | 37 |
| 5   | 71  | 59  | 50  | 44  | 66  | 56  | 48  | 42  | 50 | 44 | 39 | 44 | 39 | 35 | 39 | 35 | 32 |
| 6   | 65  | 53  | 45  | 39  | 61  | 50  | 43  | 37  | 45 | 39 | 34 | 40 | 35 | 31 | 35 | 31 | 28 |
| 7   | 60  | 48  | 40  | 34  | 57  | 45  | 38  | 33  | 41 | 35 | 30 | 36 | 31 | 28 | 32 | 28 | 25 |
| 8   | 56  | 44  | 36  | 30  | 53  | 41  | 34  | 29  | 37 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 38  | 31  | 26  | 34 | 28 | 24 | 31 | 26 | 22 | 27 | 23 | 20 |
| 10  | 49  | 37  | 29  | 24  | 46  | 35  | 28  | 23  | 32 | 26 | 22 | 28 | 24 | 20 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3635 | 3635 | 3635 |
| 5°  | 3638 | 3582 | 3607 |
| 10° | 3607 | 3531 | 3557 |
| 15° | 3551 | 3471 | 3480 |
| 20° | 3477 | 3387 | 3400 |
| 25° | 3404 | 3288 | 3309 |
| 30° | 3312 | 3196 | 3193 |
| 35° | 3225 | 3088 | 3070 |
| 40° | 3118 | 2978 | 2953 |
| 45° | 3011 | 2868 | 2834 |
| 50° | 2894 | 2752 | 2696 |
| 55° | 2772 | 2619 | 2568 |
| 60° | 2633 | 2460 | 2422 |
| 65° | 2481 | 2296 | 2250 |
| 70° | 2289 | 2095 | 2064 |
| 75° | 2022 | 1854 | 1890 |
| 80° | 1699 | 1547 | 1562 |
| 85° | 1196 | 1025 | 1023 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3011 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 298.6   | 2.4       |
| 10°-20°   | 840.1   | 6.8       |
| 20°-30°   | 1234.6  | 10.0      |
| 30°-40°   | 1433.9  | 11.6      |
| 40°-50°   | 1432.1  | 11.5      |
| 50°-60°   | 1248.8  | 10.1      |
| 60°-70°   | 923.1   | 7.4       |
| 70°-80°   | 522.3   | 4.2       |
| 80°-90°   | 142.2   | 1.1       |
| 90°-100°  | 95.7    | 0.8       |
| 100°-110° | 304.2   | 2.5       |
| 110°-120° | 520.6   | 4.2       |
| 120°-130° | 684.6   | 5.5       |
| 130°-140° | 768.4   | 6.2       |
| 140°-150° | 753.5   | 6.1       |
| 150°-160° | 632.1   | 5.1       |
| 160°-170° | 419.2   | 3.4       |
| 170°-180° | 146.5   | 1.2       |
| 0°-30°    | 2373.3  | 19.1      |
| 0°-40°    | 3807.2  | 30.7      |
| 0°-60°    | 6488.2  | 52.3      |
| 0°-90°    | 8075.8  | 65.1      |
| 90°-120°  | 920.5   | 7.4       |
| 90°-150°  | 3127.0  | 25.2      |
| 90°-180°  | 4325.0  | 34.9      |
| 0°-180°   | 12400.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3172 | 3172  | 3172 | 3172  | 3172 |      |
| 5°   | 3172 | 3160  | 3127 | 3151  | 3145 | 301  |
| 15°  | 3020 | 3002  | 2962 | 2974  | 2959 | 851  |
| 25°  | 2733 | 2709  | 2657 | 2663  | 2657 | 1258 |
| 35°  | 2358 | 2328  | 2279 | 2260  | 2245 | 1473 |
| 45°  | 1919 | 1898  | 1852 | 1818  | 1806 | 1481 |
| 55°  | 1452 | 1434  | 1397 | 1361  | 1345 | 1298 |
| 65°  | 979  | 961   | 930  | 903   | 888  | 968  |
| 75°  | 512  | 506   | 491  | 473   | 479  | 547  |
| 85°  | 125  | 122   | 119  | 110   | 107  | 139  |
| 90°  | 1    | 17    | 46   | 43    | 44   | 12   |
| 95°  | 68   | 81    | 84   | 84    | 81   | 76   |
| 105° | 281  | 284   | 287  | 290   | 290  | 296  |
| 115° | 522  | 530   | 528  | 526   | 522  | 517  |
| 125° | 760  | 771   | 768  | 764   | 762  | 679  |
| 135° | 983  | 997   | 1000 | 999   | 995  | 760  |
| 145° | 1193 | 1202  | 1210 | 1211  | 1206 | 745  |
| 155° | 1364 | 1368  | 1372 | 1379  | 1374 | 628  |
| 165° | 1484 | 1483  | 1483 | 1492  | 1486 | 419  |
| 175° | 1544 | 1541  | 1538 | 1547  | 1539 | 147  |
| 180° | 1547 | 1547  | 1547 | 1547  | 1547 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3172.4 | 3172.4 | 3172.4 | 3172.4 | 3172.4 |
| 2.5°   | 3190.8 | 3175.6 | 3141.9 | 3172.4 | 3166.5 |
| 5°     | 3172.4 | 3160.4 | 3126.8 | 3151.0 | 3145.2 |
| 7.5°   | 3151.0 | 3132.9 | 3099.2 | 3123.8 | 3117.7 |
| 10°    | 3117.7 | 3096.3 | 3059.7 | 3084.0 | 3075.0 |
| 12.5°  | 3071.7 | 3053.6 | 3017.0 | 3032.3 | 3026.1 |
| 15°    | 3019.9 | 3001.8 | 2962.0 | 2974.3 | 2959.1 |
| 17.5°  | 2955.9 | 2937.8 | 2897.9 | 2913.1 | 2897.9 |
| 20°    | 2885.6 | 2867.5 | 2824.8 | 2833.8 | 2821.8 |
| 22.5°  | 2815.7 | 2788.2 | 2748.4 | 2748.4 | 2742.3 |
| 25°    | 2733.2 | 2708.9 | 2657.1 | 2662.9 | 2657.1 |
| 27.5°  | 2641.6 | 2620.2 | 2580.7 | 2571.7 | 2556.4 |
| 30°    | 2550.3 | 2525.7 | 2480.1 | 2471.0 | 2458.7 |
| 32.5°  | 2452.6 | 2434.5 | 2385.6 | 2367.1 | 2354.8 |
| 35°    | 2358.1 | 2327.7 | 2278.8 | 2260.3 | 2245.1 |
| 37.5°  | 2251.3 | 2223.7 | 2174.9 | 2153.5 | 2138.3 |
| 40°    | 2141.5 | 2116.9 | 2068.1 | 2040.9 | 2028.6 |
| 42.5°  | 2034.7 | 2010.1 | 1961.6 | 1930.9 | 1912.8 |
| 45°    | 1918.9 | 1897.5 | 1851.5 | 1818.2 | 1806.0 |
| 47.5°  | 1806.0 | 1784.6 | 1735.7 | 1702.0 | 1683.9 |
| 50°    | 1686.9 | 1671.6 | 1628.9 | 1586.2 | 1571.0 |
| 52.5°  | 1571.0 | 1549.6 | 1510.1 | 1476.5 | 1455.1 |
| 55°    | 1452.2 | 1433.8 | 1397.2 | 1360.6 | 1345.4 |
| 57.5°  | 1333.1 | 1317.8 | 1278.1 | 1241.5 | 1229.2 |
| 60°    | 1214.0 | 1202.0 | 1159.3 | 1125.6 | 1116.6 |
| 62.5°  | 1098.1 | 1076.8 | 1046.4 | 1015.9 | 1003.6 |
| 65°    | 979.3  | 960.9  | 930.5  | 902.9  | 887.8  |
| 67.5°  | 857.4  | 841.8  | 814.6  | 793.3  | 781.0  |
| 70°    | 744.4  | 732.1  | 704.6  | 683.2  | 671.2  |
| 72.5°  | 628.5  | 616.2  | 601.0  | 579.7  | 570.5  |
| 75°    | 512.3  | 506.5  | 491.0  | 472.9  | 479.0  |
| 77.5°  | 408.8  | 396.5  | 390.3  | 381.2  | 372.2  |
| 80°    | 305.2  | 302.0  | 295.8  | 286.7  | 280.6  |
| 82.5°  | 207.5  | 207.5  | 204.6  | 192.2  | 192.2  |
| 85°    | 124.9  | 122.1  | 119.1  | 109.7  | 106.8  |
| 87.5°  | 55.0   | 48.8   | 42.7   | 33.7   | 30.4   |
| 90°    | 1.4    | 16.8   | 45.7   | 42.9   | 44.3   |
| 92.5°  | 28.9   | 39.2   | 40.6   | 42.0   | 42.0   |
| 95°    | 68.1   | 81.1   | 83.5   | 83.5   | 81.1   |
| 97.5°  | 113.3  | 125.5  | 130.6  | 130.6  | 130.6  |
| 100°   | 165.6  | 176.3  | 180.0  | 180.0  | 178.6  |
| 102.5° | 220.6  | 228.5  | 233.7  | 235.1  | 233.7  |
| 105°   | 280.8  | 284.5  | 287.3  | 289.7  | 289.7  |
| 107.5° | 340.5  | 346.1  | 346.1  | 347.0  | 340.5  |
| 110°   | 398.4  | 405.8  | 405.8  | 405.8  | 402.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 460.8  | 468.7  | 467.3  | 463.6  | 460.8  |
| 115°   | 522.4  | 529.9  | 527.5  | 526.1  | 522.4  |
| 117.5° | 583.5  | 593.8  | 587.2  | 583.5  | 579.8  |
| 120°   | 645.1  | 655.3  | 645.1  | 645.1  | 640.8  |
| 122.5° | 701.0  | 714.0  | 707.5  | 703.8  | 701.0  |
| 125°   | 759.8  | 771.4  | 767.7  | 763.5  | 762.1  |
| 127.5° | 817.2  | 831.6  | 826.5  | 820.9  | 817.2  |
| 130°   | 870.8  | 887.6  | 885.3  | 882.5  | 877.3  |
| 132.5° | 931.0  | 944.0  | 944.9  | 938.4  | 934.7  |
| 135°   | 982.8  | 997.2  | 1000.0 | 998.6  | 994.8  |
| 137.5° | 1040.6 | 1052.2 | 1054.6 | 1053.6 | 1048.1 |
| 140°   | 1091.4 | 1103.1 | 1109.6 | 1109.6 | 1104.5 |
| 142.5° | 1143.6 | 1155.3 | 1159.0 | 1160.4 | 1155.3 |
| 145°   | 1193.1 | 1202.4 | 1209.9 | 1211.3 | 1206.2 |
| 147.5° | 1237.4 | 1249.0 | 1254.7 | 1256.9 | 1251.8 |
| 150°   | 1283.1 | 1291.0 | 1296.2 | 1300.3 | 1296.2 |
| 152.5° | 1323.6 | 1331.6 | 1338.1 | 1343.3 | 1338.1 |
| 155°   | 1364.2 | 1368.0 | 1372.1 | 1378.8 | 1374.5 |
| 157.5° | 1399.2 | 1402.1 | 1404.4 | 1413.7 | 1407.2 |
| 160°   | 1430.5 | 1433.3 | 1434.7 | 1442.6 | 1437.0 |
| 162.5° | 1459.4 | 1459.4 | 1460.8 | 1469.7 | 1463.1 |
| 165°   | 1484.1 | 1482.7 | 1482.7 | 1492.1 | 1485.6 |
| 167.5° | 1506.5 | 1502.4 | 1502.4 | 1511.6 | 1505.1 |
| 170°   | 1523.3 | 1519.6 | 1518.2 | 1527.5 | 1519.6 |
| 172.5° | 1535.0 | 1531.2 | 1529.8 | 1539.1 | 1531.2 |
| 175°   | 1544.3 | 1540.6 | 1537.7 | 1547.1 | 1539.1 |
| 177.5° | 1549.4 | 1545.7 | 1542.9 | 1550.8 | 1542.9 |
| 180°   | 1547.1 | 1547.1 | 1547.1 | 1547.1 | 1547.1 |

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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 | 13.01            | 14.03 | 13.83 | 14.86 | 15.90 | 12.57          | 13.58 | 13.38 | 14.42 | 15.46 |
|                 | 3H   | 14.68            | 15.59 | 15.51 | 16.44 | 17.50 | 14.19          | 15.10 | 15.02 | 15.95 | 17.01 |
|                 | 4H   | 15.27            | 16.13 | 16.11 | 16.99 | 18.06 | 14.78          | 15.64 | 15.62 | 16.49 | 17.57 |
|                 | 6H   | 15.67            | 16.47 | 16.53 | 17.33 | 18.42 | 15.17          | 15.97 | 16.03 | 16.83 | 17.92 |
|                 | 8H   | 15.78            | 16.54 | 16.65 | 17.42 | 18.51 | 15.28          | 16.04 | 16.15 | 16.92 | 18.01 |
|                 | 12H  | 15.83            | 16.56 | 16.71 | 17.43 | 18.55 | 15.32          | 16.05 | 16.20 | 16.92 | 18.04 |
| 4H              | 2H   | 13.49            | 14.35 | 14.34 | 15.20 | 16.28 | 13.13          | 13.99 | 13.98 | 14.85 | 15.92 |
|                 | 3H   | 15.36            | 16.08 | 16.22 | 16.97 | 18.06 | 14.95          | 15.67 | 15.81 | 16.56 | 17.65 |
|                 | 4H   | 16.08            | 16.73 | 16.95 | 17.62 | 18.74 | 15.65          | 16.31 | 16.53 | 17.19 | 18.31 |
|                 | 6H   | 16.60            | 17.16 | 17.49 | 18.07 | 19.19 | 16.16          | 16.73 | 17.05 | 17.64 | 18.76 |
|                 | 8H   | 16.75            | 17.28 | 17.64 | 18.18 | 19.32 | 16.31          | 16.84 | 17.20 | 17.74 | 18.88 |
|                 | 12H  | 16.83            | 17.30 | 17.74 | 18.23 | 19.37 | 16.38          | 16.85 | 17.29 | 17.78 | 18.92 |
| 8H              | 4H   | 16.28            | 16.81 | 17.17 | 17.72 | 18.85 | 15.91          | 16.44 | 16.80 | 17.34 | 18.47 |
|                 | 6H   | 16.91            | 17.35 | 17.83 | 18.30 | 19.43 | 16.53          | 16.97 | 17.45 | 17.91 | 19.05 |
|                 | 8H   | 17.13            | 17.52 | 18.06 | 18.46 | 19.61 | 16.74          | 17.13 | 17.67 | 18.07 | 19.22 |
|                 | 12H  | 17.27            | 17.61 | 18.20 | 18.54 | 19.74 | 16.86          | 17.20 | 17.79 | 18.13 | 19.33 |
| 12H             | 4H   | 16.27            | 16.75 | 17.19 | 17.67 | 18.81 | 15.91          | 16.38 | 16.82 | 17.31 | 18.45 |
|                 | 6H   | 16.94            | 17.33 | 17.87 | 18.27 | 19.42 | 16.57          | 16.96 | 17.50 | 17.90 | 19.05 |
|                 | 8H   | 17.19            | 17.53 | 18.12 | 18.46 | 19.66 | 16.81          | 17.15 | 17.74 | 18.08 | 19.28 |