

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: P925415

Luminaire Tested: DFN2DIP-SQ2F0-080D030US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925415  
REPORT IS A COMBINATION OF REPORTS P901302 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D030US950-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

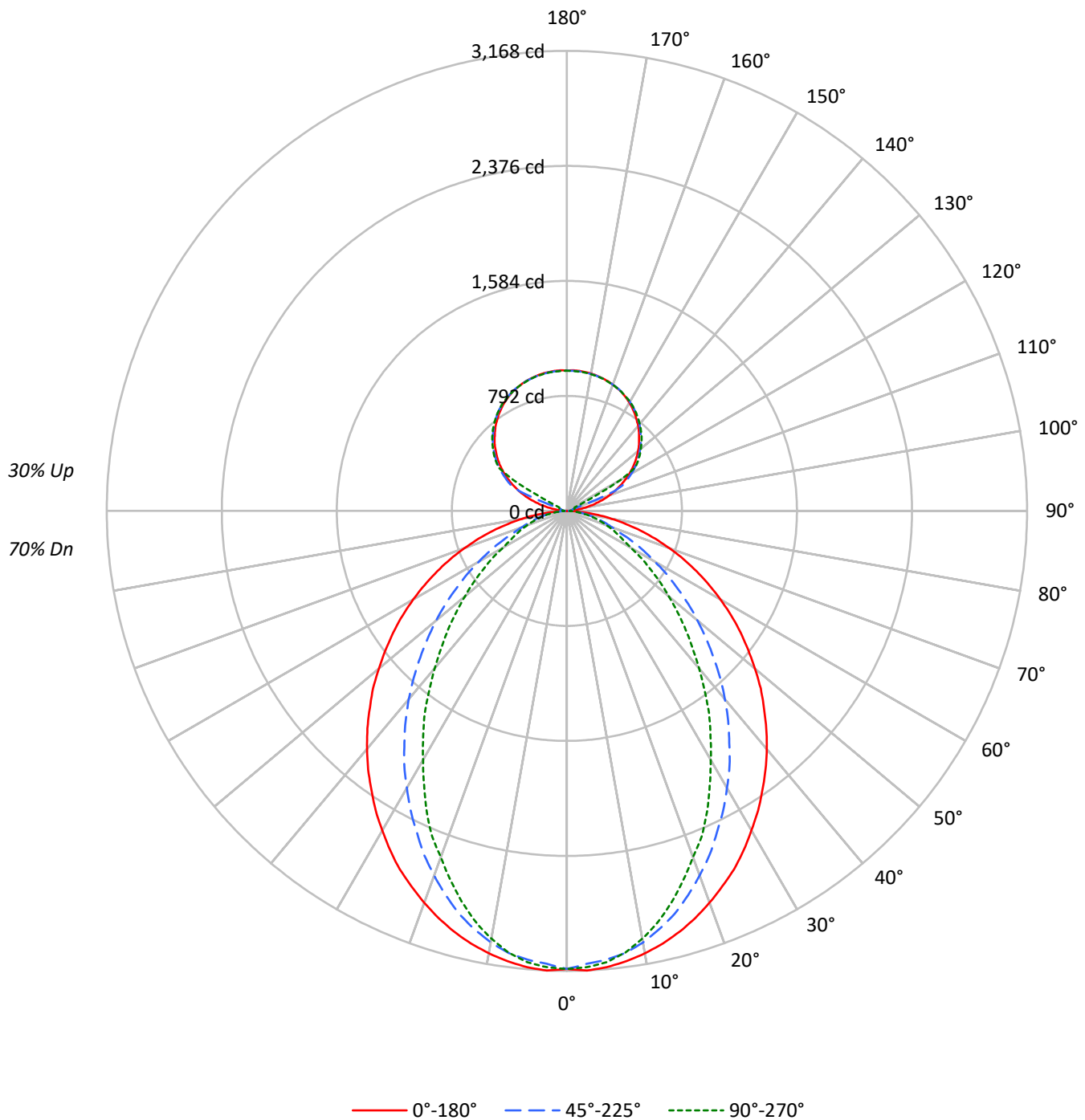
Lumens per Lamp: N/A  
Luminaire Lumens: 9320.6 lumens  
Efficiency: N/A  
Efficacy: 91.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 101.7  
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



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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   | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 84 | 84 | 84 | 74 | 74 | 74 |
| 1   | 103 | 99  | 95  | 92  | 97  | 93  | 90  | 87  | 84 | 81 | 79 | 75 | 73 | 71 | 67 | 65 | 64 |
| 2   | 94  | 87  | 81  | 76  | 89  | 83  | 77  | 73  | 74 | 70 | 67 | 67 | 63 | 61 | 59 | 57 | 55 |
| 3   | 86  | 77  | 70  | 64  | 82  | 73  | 67  | 62  | 66 | 61 | 57 | 59 | 55 | 52 | 53 | 50 | 48 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 54 | 49 | 53 | 49 | 45 | 48 | 45 | 42 |
| 5   | 73  | 62  | 54  | 48  | 69  | 59  | 52  | 46  | 53 | 47 | 43 | 48 | 44 | 40 | 44 | 40 | 37 |
| 6   | 68  | 56  | 48  | 42  | 64  | 53  | 46  | 41  | 49 | 42 | 38 | 44 | 39 | 35 | 40 | 36 | 33 |
| 7   | 63  | 51  | 43  | 37  | 60  | 49  | 41  | 36  | 44 | 38 | 34 | 40 | 35 | 32 | 37 | 32 | 29 |
| 8   | 59  | 46  | 39  | 33  | 56  | 44  | 37  | 32  | 41 | 35 | 30 | 37 | 32 | 28 | 34 | 30 | 27 |
| 9   | 55  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 32 | 27 | 34 | 29 | 26 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 49  | 38  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 24 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6936 | 6936 | 6936 |
| 5°  | 6935 | 6811 | 6860 |
| 10° | 6854 | 6662 | 6627 |
| 15° | 6748 | 6427 | 6273 |
| 20° | 6611 | 6110 | 5842 |
| 25° | 6471 | 5757 | 5426 |
| 30° | 6287 | 5396 | 4902 |
| 35° | 6106 | 5010 | 4441 |
| 40° | 5921 | 4611 | 3915 |
| 45° | 5707 | 4172 | 3440 |
| 50° | 5485 | 3730 | 2975 |
| 55° | 5253 | 3259 | 2529 |
| 60° | 4983 | 2769 | 2073 |
| 65° | 4672 | 2273 | 1854 |
| 70° | 4294 | 1810 | 1665 |
| 75° | 3818 | 1567 | 1495 |
| 80° | 3135 | 1272 | 1266 |
| 85° | 2041 | 790  | 902  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5707 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 295.6  | 3.2       |
| 10°-20°   | 811.5  | 8.7       |
| 20°-30°   | 1139.4 | 12.2      |
| 30°-40°   | 1242.0 | 13.3      |
| 40°-50°   | 1141.5 | 12.2      |
| 50°-60°   | 896.5  | 9.6       |
| 60°-70°   | 583.5  | 6.3       |
| 70°-80°   | 300.4  | 3.2       |
| 80°-90°   | 78.4   | 0.8       |
| 90°-100°  | 31.9   | 0.3       |
| 100°-110° | 118.7  | 1.3       |
| 110°-120° | 314.9  | 3.4       |
| 120°-130° | 522.3  | 5.6       |
| 130°-140° | 554.8  | 6.0       |
| 140°-150° | 515.6  | 5.5       |
| 150°-160° | 414.5  | 4.4       |
| 160°-170° | 267.1  | 2.9       |
| 170°-180° | 91.9   | 1.0       |
| 0°-30°    | 2246.6 | 24.1      |
| 0°-40°    | 3488.6 | 37.4      |
| 0°-60°    | 5526.6 | 59.3      |
| 0°-90°    | 6488.9 | 69.6      |
| 90°-120°  | 465.5  | 5.0       |
| 90°-150°  | 2058.1 | 22.1      |
| 90°-180°  | 2832.0 | 30.4      |
| 0°-180°   | 9320.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3154 | 3154  | 3154 | 3154  | 3154 |      |
| 5°   | 3154 | 3140  | 3103 | 3128  | 3120 | 299  |
| 15°  | 3000 | 2969  | 2872 | 2818  | 2789 | 845  |
| 25°  | 2723 | 2632  | 2444 | 2327  | 2284 | 1252 |
| 35°  | 2347 | 2201  | 1950 | 1770  | 1707 | 1469 |
| 45°  | 1918 | 1727  | 1427 | 1224  | 1156 | 1481 |
| 55°  | 1459 | 1236  | 928  | 756   | 702  | 1303 |
| 65°  | 985  | 754   | 497  | 400   | 391  | 976  |
| 75°  | 525  | 325   | 228  | 208   | 206  | 555  |
| 85°  | 123  | 63    | 54   | 54    | 54   | 141  |
| 90°  | 1    | 8     | 14   | 18    | 19   | 9    |
| 95°  | 45   | 22    | 27   | 31    | 30   | 54   |
| 105° | 212  | 233   | 43   | 50    | 53   | 227  |
| 115° | 402  | 414   | 431  | 108   | 57   | 396  |
| 125° | 568  | 577   | 591  | 596   | 598  | 507  |
| 135° | 703  | 714   | 721  | 728   | 726  | 543  |
| 145° | 816  | 815   | 827  | 832   | 828  | 510  |
| 155° | 898  | 892   | 900  | 904   | 899  | 414  |
| 165° | 946  | 942   | 944  | 949   | 944  | 267  |
| 175° | 968  | 963   | 964  | 969   | 962  | 92   |
| 180° | 966  | 966   | 966  | 966   | 966  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3154.3 | 3154.3 | 3154.3 | 3154.3 | 3154.3 |
| 2.5°   | 3168.5 | 3154.3 | 3122.8 | 3151.5 | 3145.8 |
| 5°     | 3154.3 | 3140.1 | 3102.8 | 3128.5 | 3120.1 |
| 7.5°   | 3128.5 | 3111.6 | 3071.6 | 3082.9 | 3068.5 |
| 10°    | 3094.3 | 3074.4 | 3017.4 | 3008.6 | 2991.6 |
| 12.5°  | 3051.7 | 3025.9 | 2948.6 | 2931.6 | 2900.2 |
| 15°    | 3000.1 | 2968.7 | 2871.7 | 2817.5 | 2789.0 |
| 17.5°  | 2940.1 | 2894.4 | 2774.5 | 2711.8 | 2666.0 |
| 20°    | 2871.7 | 2814.5 | 2671.9 | 2600.7 | 2537.6 |
| 22.5°  | 2797.5 | 2731.8 | 2566.2 | 2469.2 | 2426.5 |
| 25°    | 2723.3 | 2631.9 | 2443.5 | 2326.6 | 2283.6 |
| 27.5°  | 2634.9 | 2537.6 | 2329.3 | 2195.2 | 2129.4 |
| 30°    | 2540.7 | 2431.9 | 2203.6 | 2058.3 | 1981.0 |
| 32.5°  | 2449.2 | 2317.8 | 2084.0 | 1912.6 | 1841.1 |
| 35°    | 2346.6 | 2200.9 | 1949.8 | 1770.0 | 1706.9 |
| 37.5°  | 2246.6 | 2089.5 | 1824.1 | 1627.0 | 1555.8 |
| 40°    | 2141.0 | 1969.8 | 1692.7 | 1490.1 | 1415.8 |
| 42.5°  | 2032.5 | 1849.9 | 1561.5 | 1350.2 | 1278.9 |
| 45°    | 1918.3 | 1726.9 | 1427.4 | 1224.5 | 1156.1 |
| 47.5°  | 1809.9 | 1607.3 | 1299.0 | 1096.1 | 1033.4 |
| 50°    | 1689.9 | 1487.4 | 1173.3 | 976.1  | 916.4  |
| 52.5°  | 1572.8 | 1358.6 | 1053.3 | 865.0  | 810.8  |
| 55°    | 1458.6 | 1236.0 | 927.7  | 756.5  | 702.3  |
| 57.5°  | 1341.7 | 1113.3 | 816.5  | 656.6  | 610.8  |
| 60°    | 1221.7 | 993.4  | 699.3  | 553.9  | 508.2  |
| 62.5°  | 1104.8 | 876.4  | 599.4  | 462.5  | 439.8  |
| 65°    | 984.9  | 753.5  | 496.7  | 399.8  | 390.9  |
| 67.5°  | 870.7  | 639.4  | 399.8  | 351.0  | 342.6  |
| 70°    | 750.8  | 528.2  | 331.0  | 302.5  | 291.1  |
| 72.5°  | 636.6  | 425.2  | 276.9  | 254.1  | 248.3  |
| 75°    | 525.2  | 325.3  | 228.4  | 208.4  | 205.7  |
| 77.5°  | 414.0  | 231.1  | 179.9  | 168.4  | 162.7  |
| 80°    | 311.0  | 165.7  | 136.9  | 125.6  | 125.6  |
| 82.5°  | 216.8  | 111.4  | 94.2   | 88.4   | 88.4   |
| 85°    | 122.7  | 62.7   | 54.2   | 54.2   | 54.2   |
| 87.5°  | 45.7   | 22.7   | 22.7   | 20.0   | 20.0   |
| 90°    | 0.7    | 8.4    | 13.9   | 17.6   | 18.8   |
| 92.5°  | 17.6   | 14.7   | 16.8   | 18.2   | 18.8   |
| 95°    | 45.4   | 22.3   | 27.2   | 30.8   | 30.1   |
| 97.5°  | 81.8   | 24.5   | 35.6   | 37.8   | 38.4   |
| 100°   | 123.7  | 28.0   | 39.9   | 45.4   | 46.8   |
| 102.5° | 169.8  | 168.5  | 41.2   | 48.8   | 51.0   |
| 105°   | 212.5  | 233.4  | 42.6   | 50.3   | 53.1   |
| 107.5° | 262.1  | 279.5  | 44.1   | 51.7   | 54.6   |
| 110°   | 309.7  | 324.3  | 122.3  | 52.5   | 55.2   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 354.4 | 366.9 | 355.1 | 53.8  | 55.9  |
| 115°   | 401.8 | 413.7 | 431.2 | 107.6 | 57.3  |
| 117.5° | 443.1 | 457.1 | 469.0 | 369.0 | 185.9 |
| 120°   | 489.2 | 499.7 | 512.3 | 520.7 | 426.3 |
| 122.5° | 528.3 | 539.6 | 553.6 | 557.7 | 558.5 |
| 125°   | 568.2 | 577.3 | 590.6 | 595.5 | 597.6 |
| 127.5° | 604.5 | 614.3 | 624.9 | 631.8 | 632.5 |
| 130°   | 638.8 | 650.1 | 657.7 | 665.3 | 664.7 |
| 132.5° | 673.7 | 682.9 | 690.5 | 696.8 | 696.1 |
| 135°   | 703.1 | 714.4 | 720.6 | 727.6 | 726.2 |
| 137.5° | 733.8 | 742.2 | 749.3 | 756.2 | 754.1 |
| 140°   | 763.9 | 769.5 | 777.1 | 783.4 | 780.0 |
| 142.5° | 789.1 | 794.0 | 803.1 | 808.6 | 805.2 |
| 145°   | 815.7 | 814.9 | 826.8 | 831.7 | 828.2 |
| 147.5° | 838.7 | 836.6 | 848.5 | 851.9 | 849.2 |
| 150°   | 861.1 | 856.2 | 867.4 | 871.5 | 868.0 |
| 152.5° | 879.9 | 874.3 | 884.8 | 889.0 | 884.2 |
| 155°   | 898.1 | 891.9 | 900.2 | 904.4 | 898.9 |
| 157.5° | 912.8 | 907.3 | 913.6 | 918.4 | 912.8 |
| 160°   | 925.4 | 921.2 | 925.4 | 929.6 | 924.6 |
| 162.5° | 936.5 | 932.3 | 935.9 | 940.7 | 934.4 |
| 165°   | 946.3 | 942.2 | 944.3 | 949.1 | 944.3 |
| 167.5° | 954.0 | 949.8 | 951.9 | 956.9 | 950.6 |
| 170°   | 960.3 | 956.1 | 957.5 | 962.4 | 956.1 |
| 172.5° | 964.5 | 960.3 | 961.7 | 966.6 | 960.3 |
| 175°   | 967.9 | 963.1 | 964.5 | 969.4 | 962.4 |
| 177.5° | 969.4 | 964.5 | 965.3 | 970.1 | 963.8 |
| 180°   | 965.9 | 965.9 | 965.9 | 965.9 | 965.9 |

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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 | 15.42            | 16.44 | 16.20 | 17.24 | 18.20 | 11.38          | 12.41 | 12.16 | 13.20 | 14.16 |
|                 | 3H   | 17.10            | 18.01 | 17.89 | 18.81 | 19.81 | 12.57          | 13.48 | 13.36 | 14.29 | 15.28 |
|                 | 4H   | 17.70            | 18.56 | 18.51 | 19.37 | 20.38 | 13.02          | 13.88 | 13.82 | 14.69 | 15.69 |
|                 | 6H   | 18.12            | 18.91 | 18.93 | 19.73 | 20.75 | 13.33          | 14.12 | 14.15 | 14.94 | 15.96 |
|                 | 8H   | 18.24            | 18.99 | 19.07 | 19.83 | 20.85 | 13.42          | 14.17 | 14.25 | 15.01 | 16.03 |
|                 | 12H  | 18.30            | 19.02 | 19.13 | 19.85 | 20.89 | 13.46          | 14.18 | 14.29 | 15.01 | 16.05 |
| 4H              | 2H   | 15.46            | 16.32 | 16.27 | 17.13 | 18.14 | 11.99          | 12.85 | 12.80 | 13.66 | 14.67 |
|                 | 3H   | 17.28            | 18.00 | 18.11 | 18.84 | 19.86 | 13.34          | 14.05 | 14.16 | 14.90 | 15.92 |
|                 | 4H   | 17.97            | 18.62 | 18.80 | 19.46 | 20.51 | 13.88          | 14.53 | 14.71 | 15.37 | 16.42 |
|                 | 6H   | 18.48            | 19.04 | 19.33 | 19.90 | 20.96 | 14.29          | 14.85 | 15.14 | 15.72 | 16.77 |
|                 | 8H   | 18.64            | 19.17 | 19.50 | 20.03 | 21.09 | 14.41          | 14.93 | 15.27 | 15.80 | 16.86 |
|                 | 12H  | 18.74            | 19.21 | 19.61 | 20.09 | 21.16 | 14.47          | 14.94 | 15.35 | 15.83 | 16.90 |
| 8H              | 4H   | 17.95            | 18.47 | 18.80 | 19.33 | 20.40 | 14.16          | 14.68 | 15.02 | 15.55 | 16.61 |
|                 | 6H   | 18.50            | 18.93 | 19.38 | 19.83 | 20.90 | 14.66          | 15.09 | 15.54 | 16.00 | 17.06 |
|                 | 8H   | 18.70            | 19.08 | 19.60 | 19.98 | 21.07 | 14.84          | 15.22 | 15.73 | 16.12 | 17.20 |
|                 | 12H  | 18.83            | 19.17 | 19.73 | 20.06 | 21.20 | 14.95          | 15.29 | 15.85 | 16.18 | 17.32 |
| 12H             | 4H   | 17.91            | 18.38 | 18.78 | 19.26 | 20.33 | 14.17          | 14.64 | 15.05 | 15.52 | 16.60 |
|                 | 6H   | 18.47            | 18.85 | 19.37 | 19.75 | 20.84 | 14.71          | 15.09 | 15.60 | 15.99 | 17.07 |
|                 | 8H   | 18.69            | 19.02 | 19.58 | 19.91 | 21.05 | 14.91          | 15.25 | 15.80 | 16.14 | 17.27 |