

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: P917158

Luminaire Tested: DFN2DIP-SQ2F0-050D030US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917158  
REPORT IS A COMBINATION OF REPORTS P899776 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-050D030US930-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

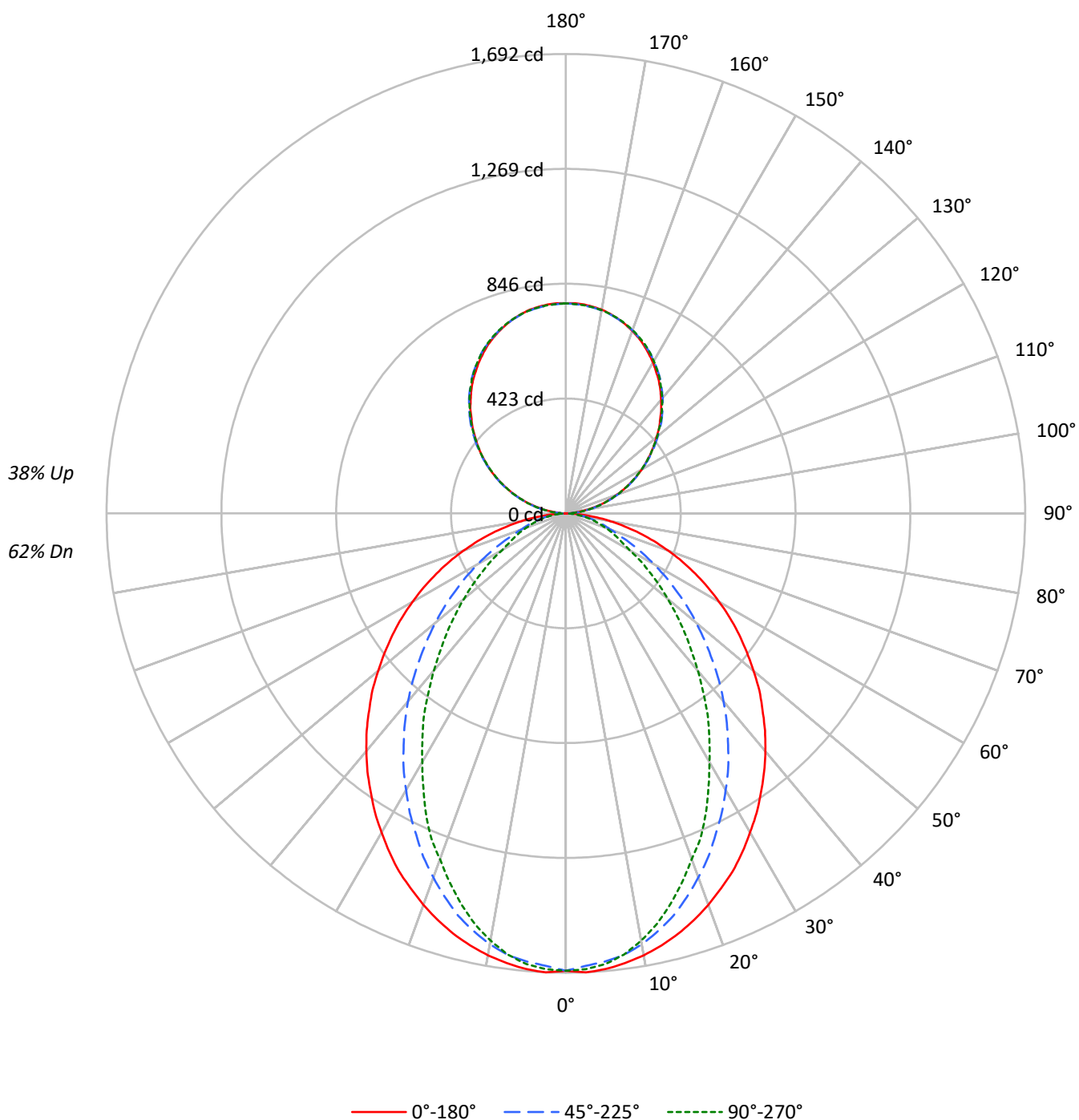
Lumens per Lamp: N/A  
Luminaire Lumens: 5629.6 lumens  
Efficiency: N/A  
Efficacy: 84.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 67  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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: P917158

CATALOG NUMBER: DFN2DIP-SQ2F0-050D030US930-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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 67 | 67 | 67 |
| 1   | 101 | 97  | 93  | 90  | 94  | 91  | 88  | 85  | 80 | 77 | 75 | 69 | 68 | 66 | 60 | 59 | 58 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 75  | 70  | 71 | 67 | 63 | 62 | 59 | 56 | 53 | 51 | 49 |
| 3   | 85  | 75  | 68  | 63  | 79  | 71  | 65  | 60  | 63 | 58 | 54 | 55 | 51 | 48 | 48 | 45 | 43 |
| 4   | 78  | 67  | 60  | 54  | 73  | 63  | 57  | 51  | 56 | 51 | 46 | 49 | 45 | 42 | 43 | 40 | 37 |
| 5   | 72  | 60  | 52  | 46  | 67  | 57  | 50  | 44  | 51 | 45 | 41 | 45 | 40 | 37 | 39 | 36 | 33 |
| 6   | 66  | 54  | 46  | 41  | 62  | 51  | 44  | 39  | 46 | 40 | 36 | 41 | 36 | 32 | 36 | 32 | 29 |
| 7   | 62  | 49  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 37 | 33 | 29 | 33 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 54  | 43  | 36  | 31  | 38 | 33 | 28 | 34 | 30 | 26 | 30 | 27 | 24 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 30  | 25  | 33 | 27 | 23 | 29 | 25 | 22 | 26 | 22 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3705 | 3705 | 3705 |
| 5°  | 3704 | 3638 | 3664 |
| 10° | 3661 | 3559 | 3540 |
| 15° | 3604 | 3433 | 3351 |
| 20° | 3531 | 3264 | 3120 |
| 25° | 3456 | 3075 | 2898 |
| 30° | 3358 | 2882 | 2618 |
| 35° | 3261 | 2676 | 2372 |
| 40° | 3162 | 2463 | 2092 |
| 45° | 3049 | 2228 | 1837 |
| 50° | 2930 | 1992 | 1589 |
| 55° | 2806 | 1741 | 1351 |
| 60° | 2662 | 1479 | 1107 |
| 65° | 2495 | 1214 | 991  |
| 70° | 2293 | 967  | 889  |
| 75° | 2039 | 837  | 798  |
| 80° | 1675 | 679  | 676  |
| 85° | 1090 | 421  | 481  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3049 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 157.9  | 2.8       |
| 10°-20°   | 433.5  | 7.7       |
| 20°-30°   | 608.6  | 10.8      |
| 30°-40°   | 663.4  | 11.8      |
| 40°-50°   | 609.7  | 10.8      |
| 50°-60°   | 478.8  | 8.5       |
| 60°-70°   | 311.7  | 5.5       |
| 70°-80°   | 160.4  | 2.8       |
| 80°-90°   | 43.1   | 0.8       |
| 90°-100°  | 47.9   | 0.9       |
| 100°-110° | 152.1  | 2.7       |
| 110°-120° | 260.3  | 4.6       |
| 120°-130° | 342.3  | 6.1       |
| 130°-140° | 384.2  | 6.8       |
| 140°-150° | 376.8  | 6.7       |
| 150°-160° | 316.1  | 5.6       |
| 160°-170° | 209.6  | 3.7       |
| 170°-180° | 73.3   | 1.3       |
| 0°-30°    | 1200.0 | 21.3      |
| 0°-40°    | 1863.4 | 33.1      |
| 0°-60°    | 2951.9 | 52.4      |
| 0°-90°    | 3467.2 | 61.6      |
| 90°-120°  | 460.2  | 8.2       |
| 90°-150°  | 1563.5 | 27.8      |
| 90°-180°  | 2162.0 | 38.4      |
| 0°-180°   | 5629.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1685 | 1685  | 1685 | 1685  | 1685 |      |
| 5°   | 1685 | 1677  | 1657 | 1671  | 1667 | 160  |
| 15°  | 1602 | 1586  | 1534 | 1505  | 1490 | 452  |
| 25°  | 1455 | 1406  | 1305 | 1243  | 1220 | 669  |
| 35°  | 1253 | 1176  | 1042 | 945   | 912  | 784  |
| 45°  | 1025 | 922   | 762  | 654   | 617  | 791  |
| 55°  | 779  | 660   | 496  | 404   | 375  | 696  |
| 65°  | 526  | 402   | 265  | 214   | 209  | 521  |
| 75°  | 280  | 174   | 122  | 111   | 110  | 297  |
| 85°  | 66   | 34    | 29   | 29    | 29   | 75   |
| 90°  | 1    | 8     | 23   | 21    | 22   | 6    |
| 95°  | 34   | 41    | 42   | 42    | 41   | 38   |
| 105° | 140  | 142   | 144  | 145   | 145  | 148  |
| 115° | 261  | 265   | 264  | 263   | 261  | 258  |
| 125° | 380  | 386   | 384  | 382   | 381  | 339  |
| 135° | 491  | 499   | 500  | 499   | 497  | 380  |
| 145° | 597  | 601   | 605  | 606   | 603  | 373  |
| 155° | 682  | 684   | 686  | 689   | 687  | 314  |
| 165° | 742  | 741   | 741  | 746   | 743  | 209  |
| 175° | 772  | 770   | 769  | 774   | 770  | 73   |
| 180° | 774  | 774   | 774  | 774   | 774  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1684.8 | 1684.8 | 1684.8 | 1684.8 | 1684.8 |
| 2.5°   | 1692.4 | 1684.8 | 1668.0 | 1683.3 | 1680.2 |
| 5°     | 1684.8 | 1677.2 | 1657.3 | 1671.0 | 1666.6 |
| 7.5°   | 1671.0 | 1662.0 | 1640.6 | 1646.7 | 1639.0 |
| 10°    | 1652.8 | 1642.1 | 1611.7 | 1607.0 | 1597.9 |
| 12.5°  | 1629.9 | 1616.2 | 1575.0 | 1565.9 | 1549.1 |
| 15°    | 1602.5 | 1585.7 | 1533.9 | 1505.0 | 1489.7 |
| 17.5°  | 1570.4 | 1546.1 | 1482.0 | 1448.5 | 1424.0 |
| 20°    | 1533.9 | 1503.3 | 1427.1 | 1389.1 | 1355.4 |
| 22.5°  | 1494.3 | 1459.1 | 1370.7 | 1318.9 | 1296.1 |
| 25°    | 1454.6 | 1405.7 | 1305.1 | 1242.7 | 1219.7 |
| 27.5°  | 1407.4 | 1355.4 | 1244.1 | 1172.5 | 1137.4 |
| 30°    | 1357.1 | 1299.0 | 1177.0 | 1099.3 | 1058.1 |
| 32.5°  | 1308.2 | 1238.0 | 1113.1 | 1021.6 | 983.4  |
| 35°    | 1253.4 | 1175.6 | 1041.5 | 945.3  | 911.7  |
| 37.5°  | 1200.0 | 1116.1 | 974.4  | 869.0  | 831.0  |
| 40°    | 1143.5 | 1052.1 | 904.1  | 795.9  | 756.3  |
| 42.5°  | 1085.7 | 988.1  | 834.1  | 721.1  | 683.1  |
| 45°    | 1024.7 | 922.4  | 762.4  | 654.0  | 617.4  |
| 47.5°  | 966.7  | 858.5  | 693.8  | 585.5  | 552.0  |
| 50°    | 902.7  | 794.4  | 626.7  | 521.4  | 489.5  |
| 52.5°  | 840.1  | 725.7  | 562.6  | 462.0  | 433.1  |
| 55°    | 779.1  | 660.1  | 495.5  | 404.1  | 375.1  |
| 57.5°  | 716.6  | 594.7  | 436.1  | 350.7  | 326.3  |
| 60°    | 652.6  | 530.6  | 373.5  | 295.9  | 271.4  |
| 62.5°  | 590.1  | 468.1  | 320.2  | 247.0  | 234.9  |
| 65°    | 526.0  | 402.5  | 265.3  | 213.5  | 208.9  |
| 67.5°  | 465.0  | 341.5  | 213.5  | 187.5  | 183.0  |
| 70°    | 401.0  | 282.1  | 176.8  | 161.6  | 155.5  |
| 72.5°  | 340.1  | 227.1  | 147.9  | 135.7  | 132.6  |
| 75°    | 280.5  | 173.7  | 122.0  | 111.3  | 109.8  |
| 77.5°  | 221.1  | 123.4  | 96.1   | 89.9   | 86.8   |
| 80°    | 166.2  | 88.5   | 73.1   | 67.1   | 67.1   |
| 82.5°  | 115.9  | 59.5   | 50.3   | 47.2   | 47.2   |
| 85°    | 65.5   | 33.5   | 28.9   | 28.9   | 28.9   |
| 87.5°  | 24.5   | 12.1   | 12.1   | 10.7   | 10.7   |
| 90°    | 0.7    | 8.4    | 22.8   | 21.4   | 22.2   |
| 92.5°  | 14.4   | 19.6   | 20.3   | 21.0   | 21.0   |
| 95°    | 34.1   | 40.6   | 41.7   | 41.7   | 40.6   |
| 97.5°  | 56.7   | 62.7   | 65.3   | 65.3   | 65.3   |
| 100°   | 82.8   | 88.1   | 90.0   | 90.0   | 89.4   |
| 102.5° | 110.3  | 114.3  | 116.8  | 117.6  | 116.8  |
| 105°   | 140.4  | 142.3  | 143.7  | 144.8  | 144.8  |
| 107.5° | 170.2  | 173.0  | 173.0  | 173.5  | 170.2  |
| 110°   | 199.2  | 202.9  | 202.9  | 202.9  | 201.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 230.4 | 234.4 | 233.7 | 231.8 | 230.4 |
| 115°   | 261.2 | 264.9 | 263.7 | 263.1 | 261.2 |
| 117.5° | 291.7 | 296.9 | 293.6 | 291.7 | 289.8 |
| 120°   | 322.5 | 327.7 | 322.5 | 322.5 | 320.4 |
| 122.5° | 350.5 | 357.0 | 353.8 | 351.9 | 350.5 |
| 125°   | 379.9 | 385.7 | 383.8 | 381.7 | 381.1 |
| 127.5° | 408.5 | 415.8 | 413.3 | 410.4 | 408.5 |
| 130°   | 435.4 | 443.8 | 442.6 | 441.2 | 438.6 |
| 132.5° | 465.5 | 472.0 | 472.5 | 469.2 | 467.3 |
| 135°   | 491.4 | 498.6 | 500.0 | 499.3 | 497.4 |
| 137.5° | 520.2 | 526.1 | 527.3 | 526.8 | 524.0 |
| 140°   | 545.7 | 551.5 | 554.8 | 554.8 | 552.2 |
| 142.5° | 571.9 | 577.6 | 579.5 | 580.2 | 577.6 |
| 145°   | 596.6 | 601.2 | 605.0 | 605.6 | 603.1 |
| 147.5° | 618.7 | 624.5 | 627.3 | 628.5 | 625.9 |
| 150°   | 641.6 | 645.6 | 648.1 | 650.2 | 648.1 |
| 152.5° | 661.9 | 665.8 | 669.0 | 671.6 | 669.0 |
| 155°   | 682.2 | 684.0 | 686.1 | 689.3 | 687.3 |
| 157.5° | 699.6 | 701.0 | 702.2 | 706.9 | 703.6 |
| 160°   | 715.3 | 716.6 | 717.4 | 721.3 | 718.5 |
| 162.5° | 729.7 | 729.7 | 730.4 | 734.8 | 731.6 |
| 165°   | 742.1 | 741.4 | 741.4 | 746.0 | 742.7 |
| 167.5° | 753.3 | 751.1 | 751.1 | 755.8 | 752.5 |
| 170°   | 761.7 | 759.8 | 759.1 | 763.8 | 759.8 |
| 172.5° | 767.4 | 765.6 | 764.9 | 769.6 | 765.6 |
| 175°   | 772.2 | 770.3 | 768.9 | 773.6 | 769.6 |
| 177.5° | 774.7 | 772.8 | 771.4 | 775.4 | 771.4 |
| 180°   | 773.6 | 773.6 | 773.6 | 773.6 | 773.6 |

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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 | 12.60            | 13.53 | 13.46 | 14.41 | 15.51 | 8.56           | 9.49  | 9.42  | 10.37 | 11.47 |
|                 | 3H   | 14.27            | 15.10 | 15.14 | 15.99 | 17.11 | 9.74           | 10.57 | 10.61 | 11.46 | 12.58 |
|                 | 4H   | 14.87            | 15.65 | 15.75 | 16.54 | 17.68 | 10.18          | 10.97 | 11.07 | 11.86 | 13.00 |
|                 | 6H   | 15.28            | 16.00 | 16.18 | 16.90 | 18.05 | 10.49          | 11.22 | 11.39 | 12.11 | 13.26 |
|                 | 8H   | 15.40            | 16.09 | 16.30 | 17.00 | 18.15 | 10.57          | 11.27 | 11.48 | 12.18 | 13.33 |
|                 | 12H  | 15.45            | 16.11 | 16.37 | 17.02 | 18.19 | 10.61          | 11.27 | 11.52 | 12.18 | 13.35 |
| 4H              | 2H   | 12.63            | 13.41 | 13.52 | 14.30 | 15.44 | 9.16           | 9.95  | 10.05 | 10.84 | 11.97 |
|                 | 3H   | 14.44            | 15.10 | 15.34 | 16.02 | 17.17 | 10.50          | 11.15 | 11.40 | 12.07 | 13.22 |
|                 | 4H   | 15.12            | 15.72 | 16.04 | 16.64 | 17.81 | 11.03          | 11.63 | 11.95 | 12.55 | 13.72 |
|                 | 6H   | 15.62            | 16.14 | 16.55 | 17.08 | 18.26 | 11.44          | 11.95 | 12.37 | 12.89 | 14.07 |
|                 | 8H   | 15.79            | 16.27 | 16.72 | 17.21 | 18.40 | 11.56          | 12.04 | 12.49 | 12.97 | 14.16 |
|                 | 12H  | 15.88            | 16.31 | 16.83 | 17.27 | 18.46 | 11.62          | 12.05 | 12.57 | 13.00 | 14.20 |
| 8H              | 4H   | 15.09            | 15.57 | 16.02 | 16.51 | 17.70 | 11.31          | 11.79 | 12.24 | 12.72 | 13.91 |
|                 | 6H   | 15.64            | 16.04 | 16.60 | 17.02 | 18.21 | 11.81          | 12.20 | 12.76 | 13.18 | 14.37 |
|                 | 8H   | 15.85            | 16.20 | 16.81 | 17.16 | 18.37 | 11.98          | 12.33 | 12.95 | 13.30 | 14.51 |
|                 | 12H  | 15.97            | 16.28 | 16.94 | 17.24 | 18.50 | 12.09          | 12.40 | 13.06 | 13.36 | 14.62 |
| 12H             | 4H   | 15.05            | 15.48 | 16.00 | 16.44 | 17.63 | 11.31          | 11.75 | 12.26 | 12.70 | 13.90 |
|                 | 6H   | 15.62            | 15.97 | 16.58 | 16.93 | 18.14 | 11.85          | 12.20 | 12.82 | 13.17 | 14.38 |
|                 | 8H   | 15.83            | 16.14 | 16.79 | 17.10 | 18.35 | 12.05          | 12.36 | 13.02 | 13.32 | 14.57 |