

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: P924285

Luminaire Tested: DFN2DIP-HX2F0-040D020US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924285  
REPORT IS A COMBINATION OF REPORTS P900676 AND P897595  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-040D020US950-RLLONL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

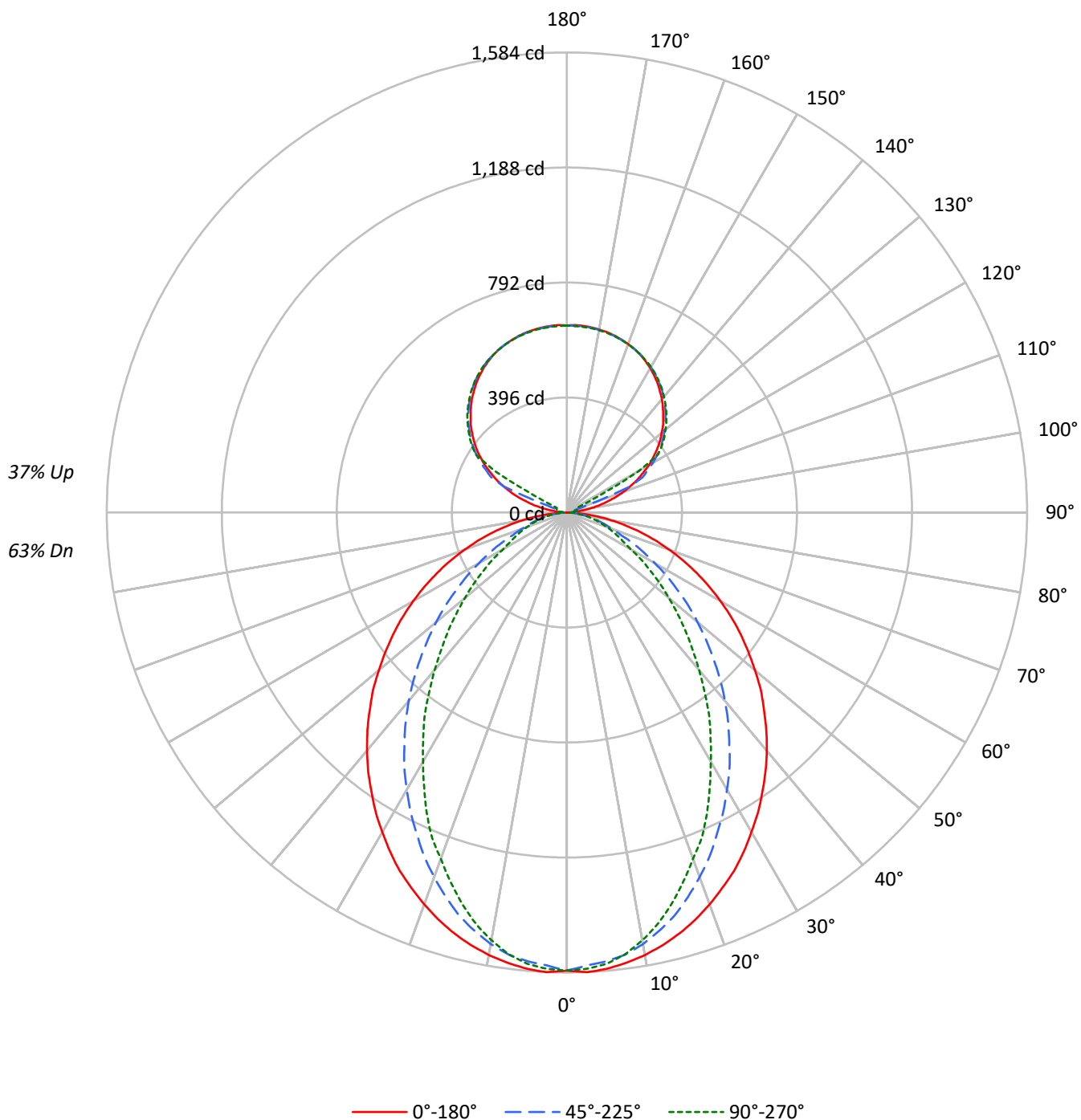
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5132.5 lumens  
Efficiency: N/A  
Efficacy: 100.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 51.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 91 | 91 | 91 | 79 | 79 | 79 | 68 | 68 | 68 |
| 1   | 101 | 97  | 93  | 90  | 95  | 91  | 88  | 85  | 80 | 78 | 76 | 71 | 69 | 67 | 61 | 60 | 59 |
| 2   | 93  | 86  | 80  | 75  | 87  | 81  | 75  | 71  | 71 | 67 | 64 | 63 | 60 | 57 | 55 | 53 | 51 |
| 3   | 85  | 76  | 69  | 63  | 80  | 72  | 65  | 60  | 63 | 58 | 54 | 56 | 52 | 49 | 49 | 46 | 44 |
| 4   | 78  | 68  | 60  | 54  | 73  | 64  | 57  | 52  | 57 | 51 | 47 | 50 | 46 | 43 | 44 | 41 | 38 |
| 5   | 72  | 61  | 53  | 47  | 67  | 57  | 50  | 45  | 51 | 45 | 41 | 46 | 41 | 37 | 40 | 37 | 34 |
| 6   | 67  | 55  | 47  | 41  | 62  | 52  | 45  | 39  | 46 | 41 | 36 | 41 | 37 | 33 | 37 | 33 | 30 |
| 7   | 62  | 50  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 38 | 33 | 30 | 34 | 30 | 27 |
| 8   | 58  | 45  | 38  | 32  | 54  | 43  | 36  | 31  | 39 | 33 | 29 | 35 | 30 | 27 | 31 | 27 | 24 |
| 9   | 54  | 42  | 34  | 29  | 51  | 40  | 33  | 28  | 36 | 30 | 26 | 32 | 27 | 24 | 29 | 25 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 37  | 30  | 25  | 33 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3716 | 3716 | 3716 |
| 5°  | 3716 | 3648 | 3674 |
| 10° | 3673 | 3568 | 3547 |
| 15° | 3617 | 3441 | 3357 |
| 20° | 3544 | 3271 | 3124 |
| 25° | 3469 | 3081 | 2900 |
| 30° | 3371 | 2887 | 2619 |
| 35° | 3275 | 2680 | 2371 |
| 40° | 3177 | 2466 | 2089 |
| 45° | 3063 | 2230 | 1834 |
| 50° | 2945 | 1993 | 1585 |
| 55° | 2820 | 1740 | 1346 |
| 60° | 2676 | 1478 | 1101 |
| 65° | 2511 | 1212 | 984  |
| 70° | 2310 | 964  | 881  |
| 75° | 2056 | 833  | 788  |
| 80° | 1692 | 674  | 664  |
| 85° | 1106 | 417  | 465  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3063 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 147.8  | 2.9       |
| 10°-20°   | 405.8  | 7.9       |
| 20°-30°   | 569.7  | 11.1      |
| 30°-40°   | 621.0  | 12.1      |
| 40°-50°   | 570.8  | 11.1      |
| 50°-60°   | 448.2  | 8.7       |
| 60°-70°   | 291.8  | 5.7       |
| 70°-80°   | 150.2  | 2.9       |
| 80°-90°   | 39.5   | 0.8       |
| 90°-100°  | 21.2   | 0.4       |
| 100°-110° | 79.1   | 1.5       |
| 110°-120° | 209.9  | 4.1       |
| 120°-130° | 348.2  | 6.8       |
| 130°-140° | 369.8  | 7.2       |
| 140°-150° | 343.7  | 6.7       |
| 150°-160° | 276.4  | 5.4       |
| 160°-170° | 178.1  | 3.5       |
| 170°-180° | 61.3   | 1.2       |
| 0°-30°    | 1123.3 | 21.9      |
| 0°-40°    | 1744.3 | 34.0      |
| 0°-60°    | 2763.3 | 53.8      |
| 0°-90°    | 3244.7 | 63.2      |
| 90°-120°  | 310.3  | 6.0       |
| 90°-150°  | 1372.0 | 26.7      |
| 90°-180°  | 1888.0 | 36.8      |
| 0°-180°   | 5132.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1577 | 1577  | 1577 | 1577  | 1577 |      |
| 5°   | 1577 | 1570  | 1551 | 1564  | 1560 | 150  |
| 15°  | 1500 | 1484  | 1436 | 1409  | 1395 | 423  |
| 25°  | 1362 | 1316  | 1222 | 1163  | 1142 | 626  |
| 35°  | 1173 | 1100  | 975  | 885   | 853  | 734  |
| 45°  | 959  | 864   | 714  | 612   | 578  | 741  |
| 55°  | 729  | 618   | 464  | 378   | 351  | 652  |
| 65°  | 492  | 377   | 248  | 200   | 196  | 488  |
| 75°  | 262  | 163   | 114  | 104   | 103  | 278  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 0    | 6     | 9    | 12    | 13   | 5    |
| 95°  | 30   | 15    | 18   | 20    | 20   | 36   |
| 105° | 142  | 156   | 28   | 34    | 35   | 151  |
| 115° | 268  | 276   | 288  | 72    | 38   | 264  |
| 125° | 379  | 385   | 394  | 397   | 398  | 338  |
| 135° | 469  | 476   | 480  | 485   | 484  | 362  |
| 145° | 544  | 543   | 551  | 554   | 552  | 340  |
| 155° | 599  | 594   | 600  | 603   | 599  | 276  |
| 165° | 631  | 628   | 629  | 633   | 629  | 178  |
| 175° | 645  | 642   | 643  | 646   | 642  | 61   |
| 180° | 644  | 644   | 644  | 644   | 644  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1577.2 | 1577.2 | 1577.2 | 1577.2 | 1577.2 |
| 2.5°   | 1584.3 | 1577.2 | 1561.4 | 1575.8 | 1572.9 |
| 5°     | 1577.2 | 1570.0 | 1551.4 | 1564.3 | 1560.1 |
| 7.5°   | 1564.3 | 1555.8 | 1535.8 | 1541.4 | 1534.3 |
| 10°    | 1547.2 | 1537.2 | 1508.7 | 1504.3 | 1495.9 |
| 12.5°  | 1525.8 | 1512.9 | 1474.3 | 1465.8 | 1450.1 |
| 15°    | 1500.1 | 1484.3 | 1435.9 | 1408.8 | 1394.6 |
| 17.5°  | 1470.1 | 1447.2 | 1387.2 | 1355.9 | 1333.0 |
| 20°    | 1435.9 | 1407.2 | 1335.9 | 1300.3 | 1268.8 |
| 22.5°  | 1398.8 | 1365.9 | 1283.0 | 1234.6 | 1213.3 |
| 25°    | 1361.6 | 1315.9 | 1221.7 | 1163.3 | 1141.7 |
| 27.5°  | 1317.5 | 1268.8 | 1164.6 | 1097.6 | 1064.7 |
| 30°    | 1270.3 | 1216.0 | 1101.8 | 1029.1 | 990.5  |
| 32.5°  | 1224.6 | 1158.9 | 1042.0 | 956.3  | 920.5  |
| 35°    | 1173.3 | 1100.4 | 974.9  | 884.9  | 853.4  |
| 37.5°  | 1123.3 | 1044.7 | 912.0  | 813.5  | 777.9  |
| 40°    | 1070.5 | 984.9  | 846.4  | 745.1  | 708.0  |
| 42.5°  | 1016.2 | 924.9  | 780.8  | 675.1  | 639.5  |
| 45°    | 959.2  | 863.5  | 713.7  | 612.3  | 578.0  |
| 47.5°  | 905.0  | 803.6  | 649.5  | 548.1  | 516.7  |
| 50°    | 845.0  | 743.6  | 586.6  | 488.1  | 458.2  |
| 52.5°  | 786.4  | 679.3  | 526.7  | 432.4  | 405.4  |
| 55°    | 729.3  | 618.0  | 463.8  | 378.3  | 351.2  |
| 57.5°  | 670.9  | 556.7  | 408.2  | 328.3  | 305.5  |
| 60°    | 610.8  | 496.7  | 349.6  | 276.9  | 254.1  |
| 62.5°  | 552.5  | 438.3  | 299.7  | 231.2  | 219.9  |
| 65°    | 492.5  | 376.7  | 248.3  | 199.9  | 195.5  |
| 67.5°  | 435.4  | 319.7  | 199.9  | 175.5  | 171.2  |
| 70°    | 375.4  | 264.1  | 165.5  | 151.3  | 145.5  |
| 72.5°  | 318.3  | 212.6  | 138.4  | 127.1  | 124.2  |
| 75°    | 262.5  | 162.7  | 114.2  | 104.2  | 102.8  |
| 77.5°  | 207.0  | 115.5  | 90.0   | 84.2   | 81.3   |
| 80°    | 155.5  | 82.8   | 68.4   | 62.9   | 62.9   |
| 82.5°  | 108.5  | 55.7   | 47.1   | 44.2   | 44.2   |
| 85°    | 61.3   | 31.4   | 27.1   | 27.1   | 27.1   |
| 87.5°  | 22.9   | 11.4   | 11.4   | 10.0   | 10.0   |
| 90°    | 0.5    | 5.6    | 9.3    | 11.6   | 12.6   |
| 92.5°  | 11.6   | 9.8    | 11.2   | 12.1   | 12.6   |
| 95°    | 30.2   | 14.9   | 18.1   | 20.5   | 20.0   |
| 97.5°  | 54.5   | 16.3   | 23.8   | 25.2   | 25.7   |
| 100°   | 82.5   | 18.6   | 26.5   | 30.2   | 31.2   |
| 102.5° | 113.2  | 112.3  | 27.5   | 32.6   | 34.1   |
| 105°   | 141.7  | 155.6  | 28.4   | 33.5   | 35.4   |
| 107.5° | 174.8  | 186.3  | 29.4   | 34.4   | 36.3   |
| 110°   | 206.4  | 216.2  | 81.6   | 35.0   | 36.8   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 236.2 | 244.6 | 236.7 | 35.9  | 37.3  |
| 115°   | 267.9 | 275.8 | 287.5 | 71.7  | 38.3  |
| 117.5° | 295.4 | 304.7 | 312.6 | 246.0 | 123.9 |
| 120°   | 326.2 | 333.1 | 341.5 | 347.2 | 284.2 |
| 122.5° | 352.2 | 359.7 | 369.0 | 371.8 | 372.3 |
| 125°   | 378.8 | 384.8 | 393.7 | 397.0 | 398.4 |
| 127.5° | 403.1 | 409.6 | 416.6 | 421.2 | 421.7 |
| 130°   | 425.9 | 433.3 | 438.5 | 443.6 | 443.1 |
| 132.5° | 449.1 | 455.2 | 460.3 | 464.5 | 464.1 |
| 135°   | 468.8 | 476.2 | 480.3 | 485.1 | 484.2 |
| 137.5° | 489.2 | 494.8 | 499.5 | 504.2 | 502.8 |
| 140°   | 509.2 | 513.1 | 518.1 | 522.3 | 520.0 |
| 142.5° | 526.0 | 529.4 | 535.4 | 539.1 | 536.7 |
| 145°   | 543.8 | 543.3 | 551.2 | 554.5 | 552.2 |
| 147.5° | 559.1 | 557.7 | 565.6 | 567.9 | 566.1 |
| 150°   | 574.0 | 570.8 | 578.2 | 581.0 | 578.7 |
| 152.5° | 586.6 | 582.9 | 589.9 | 592.7 | 589.4 |
| 155°   | 598.7 | 594.5 | 600.2 | 602.9 | 599.2 |
| 157.5° | 608.6 | 604.8 | 609.0 | 612.3 | 608.6 |
| 160°   | 617.0 | 614.1 | 617.0 | 619.7 | 616.5 |
| 162.5° | 624.3 | 621.5 | 623.9 | 627.2 | 623.0 |
| 165°   | 630.9 | 628.1 | 629.4 | 632.8 | 629.4 |
| 167.5° | 636.0 | 633.2 | 634.6 | 637.9 | 633.6 |
| 170°   | 640.2 | 637.4 | 638.3 | 641.6 | 637.4 |
| 172.5° | 643.0 | 640.2 | 641.2 | 644.4 | 640.2 |
| 175°   | 645.3 | 642.0 | 643.0 | 646.2 | 641.6 |
| 177.5° | 646.2 | 643.0 | 643.5 | 646.7 | 642.5 |
| 180°   | 643.9 | 643.9 | 643.9 | 643.9 | 643.9 |

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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 | 12.72            | 13.68 | 13.57 | 14.53 | 15.61 | 8.71           | 9.66  | 9.55  | 10.52 | 11.59 |
|                 | 3H   | 14.39            | 15.24 | 15.24 | 16.10 | 17.20 | 9.89           | 10.74 | 10.74 | 11.61 | 12.71 |
|                 | 4H   | 14.98            | 15.78 | 15.85 | 16.66 | 17.77 | 10.33          | 11.13 | 11.20 | 12.01 | 13.12 |
|                 | 6H   | 15.39            | 16.13 | 16.27 | 17.01 | 18.13 | 10.64          | 11.38 | 11.53 | 12.26 | 13.39 |
|                 | 8H   | 15.51            | 16.21 | 16.40 | 17.11 | 18.23 | 10.73          | 11.43 | 11.62 | 12.33 | 13.45 |
|                 | 12H  | 15.56            | 16.23 | 16.46 | 17.13 | 18.27 | 10.77          | 11.44 | 11.67 | 12.33 | 13.48 |
| 4H              | 2H   | 12.75            | 13.56 | 13.63 | 14.43 | 15.54 | 9.30           | 10.10 | 10.18 | 10.98 | 12.09 |
|                 | 3H   | 14.56            | 15.23 | 15.45 | 16.14 | 17.26 | 10.64          | 11.31 | 11.53 | 12.22 | 13.34 |
|                 | 4H   | 15.24            | 15.85 | 16.14 | 16.75 | 17.90 | 11.18          | 11.79 | 12.08 | 12.69 | 13.84 |
|                 | 6H   | 15.74            | 16.26 | 16.65 | 17.19 | 18.34 | 11.59          | 12.11 | 12.50 | 13.04 | 14.19 |
|                 | 8H   | 15.90            | 16.39 | 16.82 | 17.31 | 18.48 | 11.71          | 12.20 | 12.63 | 13.12 | 14.29 |
|                 | 12H  | 15.99            | 16.43 | 16.92 | 17.37 | 18.54 | 11.77          | 12.21 | 12.71 | 13.15 | 14.32 |
| 8H              | 4H   | 15.21            | 15.70 | 16.13 | 16.62 | 17.79 | 11.46          | 11.94 | 12.37 | 12.87 | 14.03 |
|                 | 6H   | 15.76            | 16.16 | 16.70 | 17.12 | 18.29 | 11.96          | 12.36 | 12.90 | 13.32 | 14.49 |
|                 | 8H   | 15.96            | 16.31 | 16.91 | 17.27 | 18.45 | 12.13          | 12.49 | 13.08 | 13.44 | 14.63 |
|                 | 12H  | 16.08            | 16.40 | 17.04 | 17.35 | 18.58 | 12.24          | 12.56 | 13.20 | 13.50 | 14.74 |
| 12H             | 4H   | 15.17            | 15.61 | 16.10 | 16.55 | 17.72 | 11.46          | 11.90 | 12.40 | 12.84 | 14.01 |
|                 | 6H   | 15.73            | 16.09 | 16.68 | 17.04 | 18.23 | 12.00          | 12.35 | 12.95 | 13.31 | 14.49 |
|                 | 8H   | 15.94            | 16.25 | 16.89 | 17.20 | 18.43 | 12.20          | 12.51 | 13.15 | 13.46 | 14.69 |