

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: P923438

Luminaire Tested: DFN2DIP-TR2F0-060D020US940-RLFL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P923438  
REPORT IS A COMBINATION OF REPORTS P900230 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-060D020US940-RLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

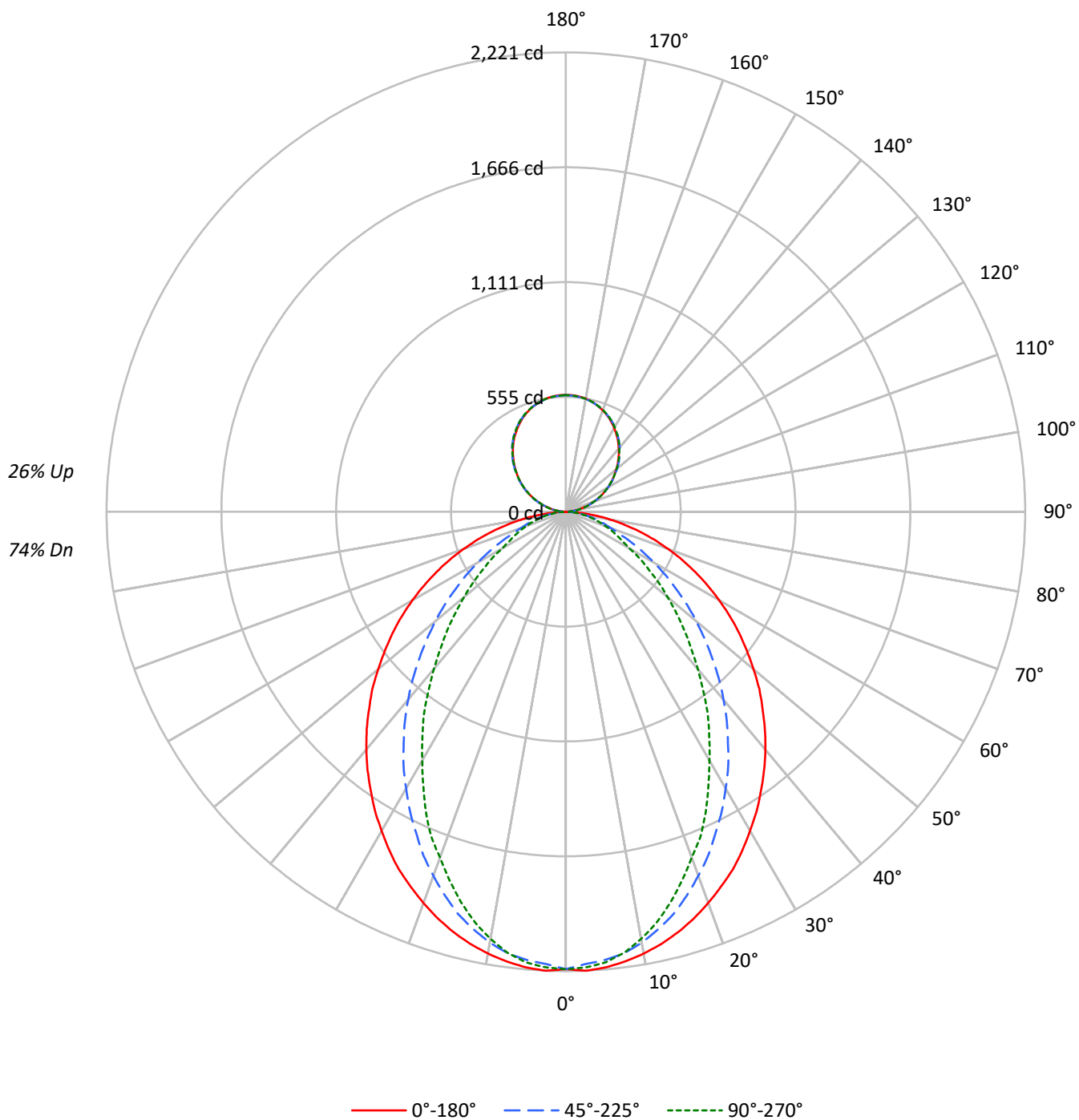
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6126.0 lumens  
Efficiency: N/A  
Efficacy: 82.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 74.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
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



TEST NUMBER: P923438

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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   | 113 | 113 | 113 | 113 | 107 | 107 | 107 | 107 | 97 | 97 | 97 | 87 | 87 | 87 | 78 | 78 | 78 |
| 1   | 104 | 100 | 96  | 93  | 99  | 95  | 92  | 89  | 86 | 84 | 81 | 78 | 76 | 74 | 70 | 69 | 68 |
| 2   | 95  | 88  | 82  | 77  | 90  | 84  | 79  | 74  | 76 | 72 | 68 | 69 | 66 | 63 | 63 | 60 | 58 |
| 3   | 87  | 78  | 71  | 65  | 83  | 75  | 68  | 63  | 68 | 63 | 58 | 62 | 58 | 54 | 56 | 53 | 50 |
| 4   | 80  | 70  | 62  | 56  | 76  | 67  | 60  | 54  | 61 | 55 | 51 | 56 | 51 | 47 | 51 | 47 | 44 |
| 5   | 74  | 63  | 54  | 48  | 70  | 60  | 53  | 47  | 55 | 49 | 44 | 51 | 45 | 42 | 46 | 42 | 39 |
| 6   | 69  | 57  | 48  | 43  | 65  | 54  | 47  | 41  | 50 | 44 | 39 | 46 | 41 | 37 | 42 | 38 | 35 |
| 7   | 64  | 51  | 43  | 38  | 61  | 49  | 42  | 37  | 46 | 39 | 35 | 42 | 37 | 33 | 39 | 34 | 31 |
| 8   | 59  | 47  | 39  | 34  | 57  | 45  | 38  | 33  | 42 | 36 | 31 | 39 | 34 | 30 | 36 | 31 | 28 |
| 9   | 56  | 43  | 36  | 31  | 53  | 42  | 35  | 30  | 39 | 33 | 28 | 36 | 31 | 27 | 33 | 29 | 26 |
| 10  | 52  | 40  | 33  | 28  | 50  | 39  | 32  | 27  | 36 | 30 | 26 | 33 | 28 | 25 | 31 | 27 | 23 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4932 | 4932 | 4932 |
| 5°  | 4933 | 4843 | 4876 |
| 10° | 4876 | 4737 | 4709 |
| 15° | 4802 | 4569 | 4456 |
| 20° | 4706 | 4344 | 4149 |
| 25° | 4608 | 4093 | 3852 |
| 30° | 4478 | 3836 | 3478 |
| 35° | 4350 | 3561 | 3150 |
| 40° | 4220 | 3277 | 2776 |
| 45° | 4070 | 2965 | 2437 |
| 50° | 3913 | 2650 | 2107 |
| 55° | 3749 | 2315 | 1789 |
| 60° | 3560 | 1967 | 1465 |
| 65° | 3341 | 1614 | 1309 |
| 70° | 3074 | 1285 | 1173 |
| 75° | 2740 | 1112 | 1051 |
| 80° | 2258 | 902  | 886  |
| 85° | 1483 | 560  | 624  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4070 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 207.2  | 3.4       |
| 10°-20°   | 568.9  | 9.3       |
| 20°-30°   | 798.7  | 13.0      |
| 30°-40°   | 870.7  | 14.2      |
| 40°-50°   | 800.3  | 13.1      |
| 50°-60°   | 628.5  | 10.3      |
| 60°-70°   | 409.1  | 6.7       |
| 70°-80°   | 210.6  | 3.4       |
| 80°-90°   | 55.4   | 0.9       |
| 90°-100°  | 34.9   | 0.6       |
| 100°-110° | 110.9  | 1.8       |
| 110°-120° | 189.8  | 3.1       |
| 120°-130° | 249.6  | 4.1       |
| 130°-140° | 280.2  | 4.6       |
| 140°-150° | 274.7  | 4.5       |
| 150°-160° | 230.4  | 3.8       |
| 160°-170° | 152.8  | 2.5       |
| 170°-180° | 53.4   | 0.9       |
| 0°-30°    | 1574.9 | 25.7      |
| 0°-40°    | 2445.6 | 39.9      |
| 0°-60°    | 3874.3 | 63.2      |
| 0°-90°    | 4549.3 | 74.3      |
| 90°-120°  | 335.6  | 5.5       |
| 90°-150°  | 1140.0 | 18.6      |
| 90°-180°  | 1577.0 | 25.7      |
| 0°-180°   | 6126.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2211 | 2211  | 2211 | 2211  | 2211 |      |
| 5°   | 2211 | 2201  | 2175 | 2193  | 2187 | 210  |
| 15°  | 2103 | 2081  | 2013 | 1975  | 1955 | 593  |
| 25°  | 1909 | 1845  | 1713 | 1631  | 1601 | 878  |
| 35°  | 1645 | 1543  | 1367 | 1241  | 1197 | 1030 |
| 45°  | 1345 | 1211  | 1001 | 858   | 810  | 1039 |
| 55°  | 1022 | 866   | 650  | 530   | 492  | 914  |
| 65°  | 690  | 528   | 348  | 280   | 274  | 685  |
| 75°  | 368  | 228   | 160  | 146   | 144  | 389  |
| 85°  | 86   | 44    | 38   | 38    | 38   | 99   |
| 90°  | 0    | 6     | 17   | 16    | 16   | 6    |
| 95°  | 25   | 30    | 30   | 30    | 30   | 28   |
| 105° | 102  | 104   | 105  | 106   | 106  | 108  |
| 115° | 190  | 193   | 192  | 192   | 190  | 188  |
| 125° | 277  | 281   | 280  | 278   | 278  | 248  |
| 135° | 358  | 364   | 364  | 364   | 363  | 277  |
| 145° | 435  | 438   | 441  | 442   | 440  | 272  |
| 155° | 497  | 499   | 500  | 503   | 501  | 229  |
| 165° | 541  | 541   | 541  | 544   | 542  | 153  |
| 175° | 563  | 562   | 561  | 564   | 561  | 53   |
| 180° | 564  | 564   | 564  | 564   | 564  |      |

TEST NUMBER: P923438

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2211.3 | 2211.3 | 2211.3 | 2211.3 | 2211.3 |
| 2.5°   | 2221.3 | 2211.3 | 2189.1 | 2209.3 | 2205.3 |
| 5°     | 2211.3 | 2201.3 | 2175.1 | 2193.3 | 2187.3 |
| 7.5°   | 2193.3 | 2181.3 | 2153.3 | 2161.1 | 2151.2 |
| 10°    | 2169.2 | 2155.2 | 2115.3 | 2109.2 | 2097.2 |
| 12.5°  | 2139.3 | 2121.2 | 2067.1 | 2055.2 | 2033.1 |
| 15°    | 2103.2 | 2081.1 | 2013.1 | 1975.1 | 1955.2 |
| 17.5°  | 2061.2 | 2029.1 | 1945.0 | 1901.0 | 1869.0 |
| 20°    | 2013.1 | 1973.0 | 1873.0 | 1823.1 | 1779.0 |
| 22.5°  | 1961.1 | 1915.0 | 1798.9 | 1731.0 | 1701.0 |
| 25°    | 1909.2 | 1845.0 | 1713.0 | 1631.0 | 1600.9 |
| 27.5°  | 1847.2 | 1779.0 | 1632.9 | 1538.8 | 1492.8 |
| 30°    | 1781.1 | 1704.9 | 1544.8 | 1442.9 | 1388.7 |
| 32.5°  | 1717.0 | 1624.9 | 1461.0 | 1340.8 | 1290.7 |
| 35°    | 1645.0 | 1542.9 | 1366.9 | 1240.7 | 1196.6 |
| 37.5°  | 1574.9 | 1464.7 | 1278.8 | 1140.6 | 1090.7 |
| 40°    | 1500.8 | 1380.9 | 1186.6 | 1044.5 | 992.6  |
| 42.5°  | 1424.9 | 1296.8 | 1094.7 | 946.5  | 896.6  |
| 45°    | 1344.8 | 1210.6 | 1000.7 | 858.4  | 810.4  |
| 47.5°  | 1268.8 | 1126.8 | 910.6  | 768.4  | 724.4  |
| 50°    | 1184.7 | 1042.7 | 822.5  | 684.3  | 642.5  |
| 52.5°  | 1102.5 | 952.4  | 738.4  | 606.4  | 568.4  |
| 55°    | 1022.5 | 866.5  | 650.3  | 530.4  | 492.3  |
| 57.5°  | 940.6  | 780.4  | 572.4  | 460.3  | 428.2  |
| 60°    | 856.5  | 696.4  | 490.3  | 388.3  | 356.2  |
| 62.5°  | 774.5  | 614.5  | 420.2  | 324.2  | 308.3  |
| 65°    | 690.5  | 528.2  | 348.2  | 280.3  | 274.1  |
| 67.5°  | 610.4  | 448.2  | 280.3  | 246.1  | 240.1  |
| 70°    | 526.3  | 370.2  | 232.0  | 212.1  | 204.0  |
| 72.5°  | 446.3  | 298.1  | 194.0  | 178.2  | 174.1  |
| 75°    | 368.2  | 228.0  | 160.1  | 146.1  | 144.2  |
| 77.5°  | 290.3  | 162.0  | 126.1  | 118.1  | 114.0  |
| 80°    | 218.0  | 116.1  | 95.9   | 88.1   | 88.1   |
| 82.5°  | 152.0  | 78.1   | 66.0   | 62.0   | 62.0   |
| 85°    | 86.0   | 44.0   | 38.0   | 38.0   | 38.0   |
| 87.5°  | 32.1   | 16.0   | 16.0   | 14.0   | 14.0   |
| 90°    | 0.5    | 6.2    | 16.7   | 15.6   | 16.1   |
| 92.5°  | 10.5   | 14.3   | 14.8   | 15.3   | 15.3   |
| 95°    | 24.8   | 29.6   | 30.4   | 30.4   | 29.6   |
| 97.5°  | 41.3   | 45.7   | 47.6   | 47.6   | 47.6   |
| 100°   | 60.4   | 64.3   | 65.6   | 65.6   | 65.1   |
| 102.5° | 80.4   | 83.3   | 85.2   | 85.7   | 85.2   |
| 105°   | 102.4  | 103.7  | 104.8  | 105.6  | 105.6  |
| 107.5° | 124.1  | 126.2  | 126.2  | 126.5  | 124.1  |
| 110°   | 145.3  | 147.9  | 147.9  | 147.9  | 146.6  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 168.0 | 170.9 | 170.4 | 169.0 | 168.0 |
| 115°   | 190.5 | 193.1 | 192.3 | 191.8 | 190.5 |
| 117.5° | 212.8 | 216.5 | 214.1 | 212.8 | 211.3 |
| 120°   | 235.1 | 238.9 | 235.1 | 235.1 | 233.6 |
| 122.5° | 255.6 | 260.3 | 258.0 | 256.6 | 255.6 |
| 125°   | 277.0 | 281.2 | 279.9 | 278.4 | 277.9 |
| 127.5° | 297.9 | 303.2 | 301.3 | 299.3 | 297.9 |
| 130°   | 317.4 | 323.6 | 322.7 | 321.7 | 319.9 |
| 132.5° | 339.4 | 344.2 | 344.5 | 342.1 | 340.7 |
| 135°   | 358.3 | 363.6 | 364.5 | 364.1 | 362.7 |
| 137.5° | 379.3 | 383.6 | 384.5 | 384.1 | 382.1 |
| 140°   | 397.9 | 402.2 | 404.6 | 404.6 | 402.7 |
| 142.5° | 417.0 | 421.2 | 422.6 | 423.0 | 421.2 |
| 145°   | 435.0 | 438.4 | 441.1 | 441.6 | 439.7 |
| 147.5° | 451.1 | 455.4 | 457.4 | 458.2 | 456.4 |
| 150°   | 467.8 | 470.6 | 472.5 | 474.0 | 472.5 |
| 152.5° | 482.6 | 485.4 | 487.9 | 489.7 | 487.9 |
| 155°   | 497.4 | 498.7 | 500.2 | 502.7 | 501.1 |
| 157.5° | 510.1 | 511.1 | 512.0 | 515.4 | 513.0 |
| 160°   | 521.6 | 522.5 | 523.1 | 525.9 | 523.9 |
| 162.5° | 532.1 | 532.1 | 532.5 | 535.8 | 533.4 |
| 165°   | 541.1 | 540.6 | 540.6 | 543.9 | 541.6 |
| 167.5° | 549.2 | 547.7 | 547.7 | 551.1 | 548.8 |
| 170°   | 555.4 | 554.0 | 553.5 | 556.9 | 554.0 |
| 172.5° | 559.6 | 558.2 | 557.8 | 561.2 | 558.2 |
| 175°   | 563.0 | 561.7 | 560.6 | 564.0 | 561.2 |
| 177.5° | 564.9 | 563.6 | 562.5 | 565.3 | 562.5 |
| 180°   | 564.0 | 564.0 | 564.0 | 564.0 | 564.0 |

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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 | 14.58            | 15.66 | 15.31 | 16.40 | 17.28 | 10.56          | 11.64 | 11.29 | 12.38 | 13.26 |
|                 | 3H   | 16.25            | 17.22 | 16.99 | 17.97 | 18.88 | 11.76          | 12.72 | 12.49 | 13.47 | 14.38 |
|                 | 4H   | 16.86            | 17.77 | 17.61 | 18.52 | 19.45 | 12.21          | 13.11 | 12.96 | 13.87 | 14.80 |
|                 | 6H   | 17.27            | 18.11 | 18.04 | 18.88 | 19.82 | 12.53          | 13.36 | 13.30 | 14.13 | 15.07 |
|                 | 8H   | 17.40            | 18.19 | 18.18 | 18.98 | 19.92 | 12.62          | 13.41 | 13.40 | 14.20 | 15.14 |
|                 | 12H  | 17.46            | 18.21 | 18.24 | 19.00 | 19.96 | 12.66          | 13.42 | 13.44 | 14.20 | 15.17 |
| 4H              | 2H   | 14.63            | 15.53 | 15.39 | 16.29 | 17.22 | 11.18          | 12.08 | 11.94 | 12.84 | 13.77 |
|                 | 3H   | 16.45            | 17.20 | 17.22 | 18.00 | 18.94 | 12.53          | 13.28 | 13.30 | 14.08 | 15.02 |
|                 | 4H   | 17.13            | 17.82 | 17.92 | 18.61 | 19.58 | 13.07          | 13.76 | 13.86 | 14.55 | 15.52 |
|                 | 6H   | 17.64            | 18.23 | 18.44 | 19.05 | 20.03 | 13.49          | 14.08 | 14.29 | 14.90 | 15.88 |
|                 | 8H   | 17.81            | 18.36 | 18.61 | 19.17 | 20.16 | 13.61          | 14.17 | 14.42 | 14.98 | 15.97 |
|                 | 12H  | 17.90            | 18.40 | 18.73 | 19.23 | 20.23 | 13.68          | 14.18 | 14.51 | 15.01 | 16.01 |
| 8H              | 4H   | 17.12            | 17.67 | 17.92 | 18.48 | 19.47 | 13.36          | 13.91 | 14.17 | 14.72 | 15.71 |
|                 | 6H   | 17.67            | 18.12 | 18.50 | 18.98 | 19.97 | 13.86          | 14.32 | 14.70 | 15.18 | 16.17 |
|                 | 8H   | 17.87            | 18.27 | 18.72 | 19.13 | 20.13 | 14.04          | 14.45 | 14.89 | 15.30 | 16.31 |
|                 | 12H  | 18.00            | 18.36 | 18.85 | 19.20 | 20.26 | 14.16          | 14.52 | 15.01 | 15.36 | 16.42 |
| 12H             | 4H   | 17.08            | 17.57 | 17.91 | 18.41 | 19.40 | 13.37          | 13.87 | 14.20 | 14.70 | 15.70 |
|                 | 6H   | 17.64            | 18.05 | 18.49 | 18.90 | 19.91 | 13.91          | 14.31 | 14.76 | 15.17 | 16.17 |
|                 | 8H   | 17.85            | 18.21 | 18.70 | 19.06 | 20.12 | 14.11          | 14.47 | 14.96 | 15.32 | 16.38 |