

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: P917947

Luminaire Tested: DFN2DIP-TR2F0-040D030US930-RLONL

Issue Date: 11/21/2024

**Test Information**

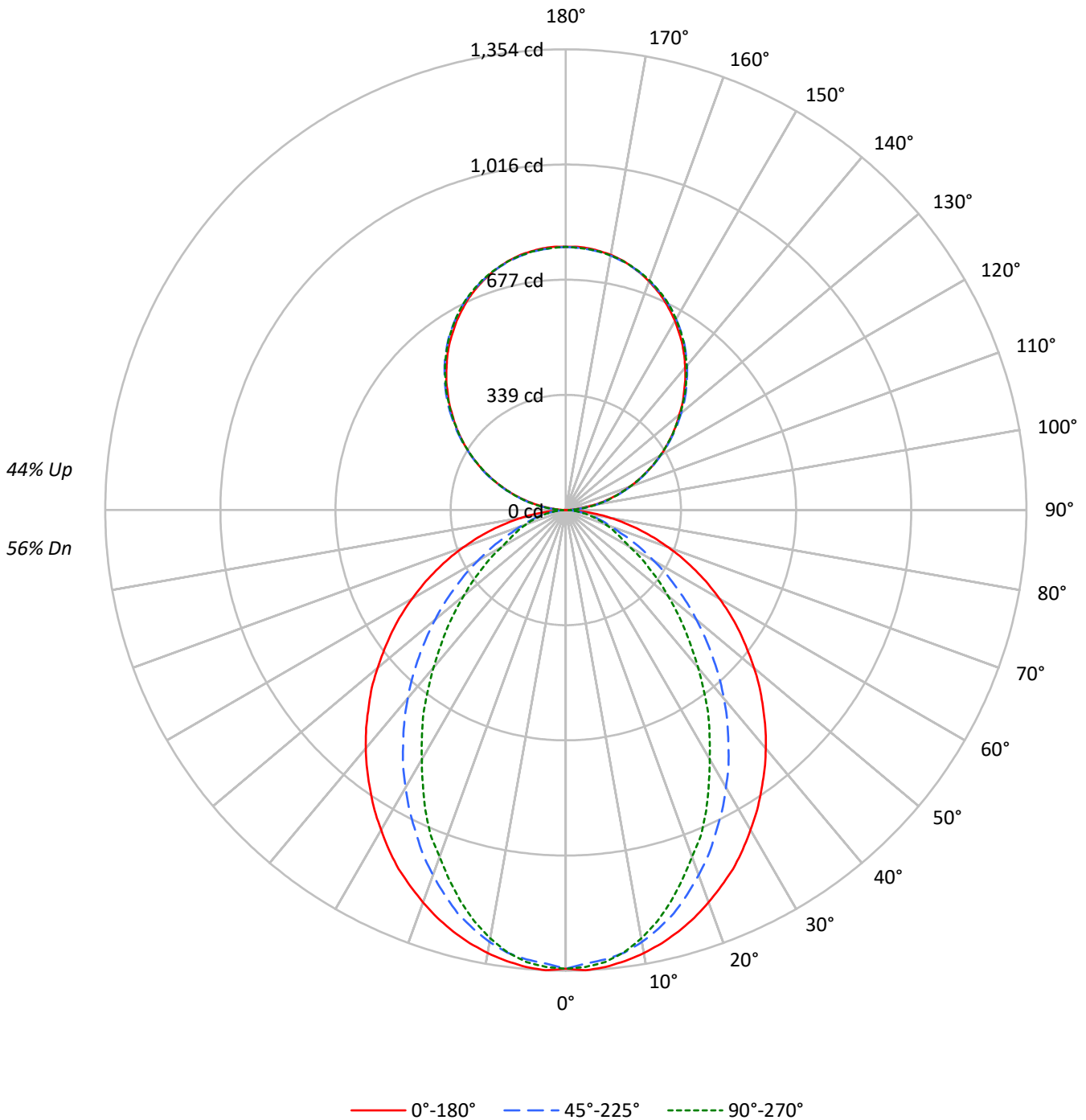
Test Method: LM-79-2019  
Report Number: P917947  
REPORT IS A COMBINATION OF REPORTS P901756 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-040D030US930-RLLONL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4936.6 lumens  
Efficiency: N/A  
Efficacy: 85.4 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: General Diffuse  
  
Input Watts (W): 57.8  
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 |    |    |    | 20 |    |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |    |    |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |    |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 | 56 |    |    |    | 56 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 55 | 54 | 53 | 48 |    |    |    | 48 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 49 | 47 | 46 | 41 |    |    |    | 41 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 | 36 |    |    |    | 36 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 | 31 |    |    |    | 31 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 30 | 27 |    |    |    | 27 |
| 6   | 65  | 53  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 31 | 33 | 30 | 27 | 24 |    |    |    | 24 |
| 7   | 61  | 48  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 | 22 |    |    |    | 22 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 | 20 |    |    |    | 20 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 | 18 |    |    |    | 18 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 | 16 |    |    |    | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3006 | 3006 | 3006 |
| 5°  | 3007 | 2952 | 2972 |
| 10° | 2973 | 2887 | 2871 |
| 15° | 2927 | 2785 | 2716 |
| 20° | 2868 | 2648 | 2529 |
| 25° | 2808 | 2494 | 2348 |
| 30° | 2729 | 2338 | 2120 |
| 35° | 2652 | 2171 | 1920 |
| 40° | 2572 | 1998 | 1692 |
| 45° | 2481 | 1807 | 1486 |
| 50° | 2385 | 1615 | 1284 |
| 55° | 2286 | 1411 | 1091 |
| 60° | 2169 | 1199 | 893  |
| 65° | 2036 | 984  | 798  |
| 70° | 1874 | 784  | 715  |
| 75° | 1670 | 678  | 641  |
| 80° | 1376 | 550  | 540  |
| 85° | 904  | 342  | 381  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2481 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 126.3  | 2.6       |
| 10°-20°   | 346.8  | 7.0       |
| 20°-30°   | 486.9  | 9.9       |
| 30°-40°   | 530.7  | 10.8      |
| 40°-50°   | 487.8  | 9.9       |
| 50°-60°   | 383.1  | 7.8       |
| 60°-70°   | 249.3  | 5.1       |
| 70°-80°   | 128.4  | 2.6       |
| 80°-90°   | 35.0   | 0.7       |
| 90°-100°  | 47.9   | 1.0       |
| 100°-110° | 152.1  | 3.1       |
| 110°-120° | 260.3  | 5.3       |
| 120°-130° | 342.3  | 6.9       |
| 130°-140° | 384.2  | 7.8       |
| 140°-150° | 376.8  | 7.6       |
| 150°-160° | 316.1  | 6.4       |
| 160°-170° | 209.6  | 4.2       |
| 170°-180° | 73.3   | 1.5       |
| 0°-30°    | 960.0  | 19.4      |
| 0°-40°    | 1490.7 | 30.2      |
| 0°-60°    | 2361.5 | 47.8      |
| 0°-90°    | 2774.2 | 56.2      |
| 90°-120°  | 460.2  | 9.3       |
| 90°-150°  | 1563.5 | 31.7      |
| 90°-180°  | 2162.0 | 43.8      |
| 0°-180°   | 4936.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1348 | 1348  | 1348 | 1348  | 1348 |      |
| 5°   | 1348 | 1342  | 1326 | 1337  | 1333 | 128  |
| 15°  | 1282 | 1268  | 1227 | 1204  | 1192 | 361  |
| 25°  | 1164 | 1125  | 1044 | 994   | 976  | 535  |
| 35°  | 1003 | 940   | 833  | 756   | 729  | 628  |
| 45°  | 820  | 738   | 610  | 523   | 494  | 633  |
| 55°  | 623  | 528   | 396  | 323   | 300  | 557  |
| 65°  | 421  | 322   | 212  | 171   | 167  | 417  |
| 75°  | 224  | 139   | 98   | 89    | 88   | 237  |
| 85°  | 52   | 27    | 23   | 23    | 23   | 60   |
| 90°  | 1    | 8     | 23   | 21    | 22   | 5    |
| 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°     | 1347.9 | 1347.9 | 1347.9 | 1347.9 | 1347.9 |
| 2.5°   | 1354.0 | 1347.9 | 1334.4 | 1346.7 | 1344.2 |
| 5°     | 1347.9 | 1341.7 | 1325.8 | 1336.8 | 1333.3 |
| 7.5°   | 1336.8 | 1329.6 | 1312.5 | 1317.3 | 1311.2 |
| 10°    | 1322.3 | 1313.7 | 1289.3 | 1285.6 | 1278.4 |
| 12.5°  | 1304.0 | 1293.0 | 1260.0 | 1252.7 | 1239.3 |
| 15°    | 1282.0 | 1268.5 | 1227.1 | 1204.0 | 1191.8 |
| 17.5°  | 1256.4 | 1236.8 | 1185.5 | 1158.8 | 1139.2 |
| 20°    | 1227.1 | 1202.6 | 1141.7 | 1111.3 | 1084.3 |
| 22.5°  | 1195.4 | 1167.3 | 1096.5 | 1055.1 | 1036.9 |
| 25°    | 1163.7 | 1124.6 | 1044.1 | 994.2  | 975.7  |
| 27.5°  | 1125.9 | 1084.3 | 995.3  | 938.0  | 909.9  |
| 30°    | 1085.7 | 1039.2 | 941.6  | 879.5  | 846.5  |
| 32.5°  | 1046.6 | 990.4  | 890.5  | 817.3  | 786.7  |
| 35°    | 1002.7 | 940.4  | 833.2  | 756.3  | 729.4  |
| 37.5°  | 960.0  | 892.8  | 779.4  | 695.2  | 664.8  |
| 40°    | 914.8  | 841.7  | 723.3  | 636.7  | 605.0  |
| 42.5°  | 868.5  | 790.4  | 667.2  | 576.9  | 546.5  |
| 45°    | 819.7  | 737.9  | 609.9  | 523.3  | 494.0  |
| 47.5°  | 773.4  | 686.8  | 555.1  | 468.4  | 441.6  |
| 50°    | 722.1  | 635.5  | 501.3  | 417.1  | 391.6  |
| 52.5°  | 672.1  | 580.6  | 450.1  | 369.6  | 346.4  |
| 55°    | 623.3  | 528.2  | 396.4  | 323.3  | 300.1  |
| 57.5°  | 573.3  | 475.7  | 348.9  | 280.5  | 261.1  |
| 60°    | 522.0  | 424.4  | 298.8  | 236.7  | 217.2  |
| 62.5°  | 472.1  | 374.5  | 256.1  | 197.6  | 187.9  |
| 65°    | 420.9  | 322.0  | 212.2  | 170.8  | 167.1  |
| 67.5°  | 372.1  | 273.2  | 170.8  | 150.0  | 146.3  |
| 70°    | 320.8  | 225.7  | 141.5  | 129.3  | 124.3  |
| 72.5°  | 272.1  | 181.7  | 118.3  | 108.6  | 106.2  |
| 75°    | 224.4  | 139.0  | 97.6   | 89.0   | 87.9   |
| 77.5°  | 176.9  | 98.7   | 76.9   | 72.0   | 69.5   |
| 80°    | 132.9  | 70.8   | 58.5   | 53.7   | 53.7   |
| 82.5°  | 92.7   | 47.6   | 40.3   | 37.7   | 37.7   |
| 85°    | 52.4   | 26.8   | 23.2   | 23.2   | 23.2   |
| 87.5°  | 19.6   | 9.7    | 9.7    | 8.6    | 8.6    |
| 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 | 11.40            | 12.29 | 12.31 | 13.21 | 14.39 | 7.38           | 8.27  | 8.29  | 9.19  | 10.37 |
|                 | 3H   | 13.06            | 13.85 | 13.98 | 14.78 | 15.99 | 8.56           | 9.35  | 9.48  | 10.28 | 11.49 |
|                 | 4H   | 13.65            | 14.40 | 14.59 | 15.34 | 16.56 | 9.00           | 9.75  | 9.94  | 10.69 | 11.90 |
|                 | 6H   | 14.06            | 14.75 | 15.01 | 15.69 | 16.92 | 9.31           | 10.00 | 10.26 | 10.94 | 12.17 |
|                 | 8H   | 14.18            | 14.83 | 15.13 | 15.79 | 17.02 | 9.40           | 10.05 | 10.35 | 11.01 | 12.24 |
|                 | 12H  | 14.23            | 14.85 | 15.19 | 15.81 | 17.06 | 9.43           | 10.06 | 10.39 | 11.01 | 12.26 |
| 4H              | 2H   | 11.42            | 12.17 | 12.36 | 13.11 | 14.32 | 7.97           | 8.72  | 8.91  | 9.66  | 10.87 |
|                 | 3H   | 13.23            | 13.85 | 14.18 | 14.82 | 16.05 | 9.31           | 9.93  | 10.26 | 10.90 | 12.13 |
|                 | 4H   | 13.91            | 14.47 | 14.87 | 15.43 | 16.69 | 9.84           | 10.41 | 10.81 | 11.37 | 12.63 |
|                 | 6H   | 14.40            | 14.89 | 15.37 | 15.87 | 17.13 | 10.25          | 10.74 | 11.22 | 11.72 | 12.98 |
|                 | 8H   | 14.56            | 15.02 | 15.54 | 16.00 | 17.27 | 10.37          | 10.82 | 11.35 | 11.80 | 13.07 |
|                 | 12H  | 14.65            | 15.06 | 15.64 | 16.05 | 17.33 | 10.43          | 10.84 | 11.42 | 11.83 | 13.11 |
| 8H              | 4H   | 13.87            | 14.33 | 14.85 | 15.31 | 16.58 | 10.11          | 10.57 | 11.09 | 11.55 | 12.82 |
|                 | 6H   | 14.42            | 14.79 | 15.42 | 15.81 | 17.08 | 10.61          | 10.99 | 11.61 | 12.01 | 13.28 |
|                 | 8H   | 14.62            | 14.95 | 15.63 | 15.96 | 17.24 | 10.79          | 11.12 | 11.80 | 12.13 | 13.42 |
|                 | 12H  | 14.74            | 15.03 | 15.75 | 16.04 | 17.37 | 10.90          | 11.19 | 11.91 | 12.19 | 13.53 |
| 12H             | 4H   | 13.83            | 14.24 | 14.82 | 15.23 | 16.51 | 10.12          | 10.53 | 11.11 | 11.52 | 12.80 |
|                 | 6H   | 14.39            | 14.72 | 15.40 | 15.73 | 17.02 | 10.66          | 10.99 | 11.67 | 12.00 | 13.28 |
|                 | 8H   | 14.60            | 14.89 | 15.61 | 15.89 | 17.22 | 10.85          | 11.15 | 11.87 | 12.15 | 13.48 |