

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: P908354

Luminaire Tested: DFN2DIP-PN2F0-040D040US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908354  
REPORT IS A COMBINATION OF REPORTS P899486 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-040D040US840-RLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

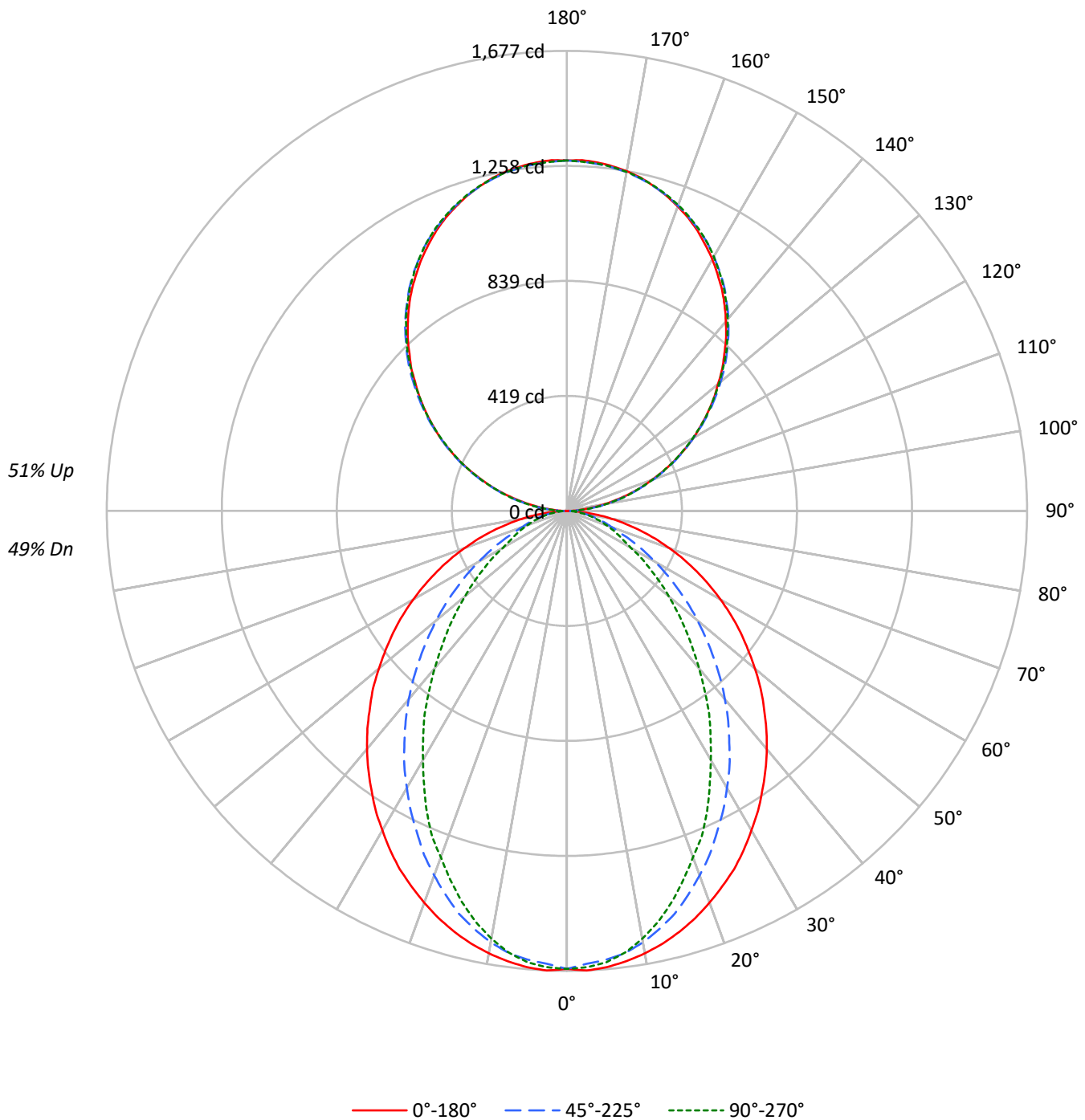
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7008.5 lumens  
Efficiency: N/A  
Efficacy: 99.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 70.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3616 | 3616 | 3616 |
| 5°  | 3616 | 3551 | 3576 |
| 10° | 3574 | 3473 | 3455 |
| 15° | 3519 | 3351 | 3270 |
| 20° | 3448 | 3186 | 3045 |
| 25° | 3376 | 3002 | 2828 |
| 30° | 3280 | 2814 | 2554 |
| 35° | 3186 | 2613 | 2314 |
| 40° | 3090 | 2405 | 2040 |
| 45° | 2980 | 2176 | 1792 |
| 50° | 2864 | 1945 | 1549 |
| 55° | 2744 | 1700 | 1317 |
| 60° | 2604 | 1444 | 1079 |
| 65° | 2442 | 1186 | 965  |
| 70° | 2247 | 945  | 866  |
| 75° | 1999 | 818  | 778  |
| 80° | 1645 | 664  | 659  |
| 85° | 1075 | 413  | 467  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2980 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 156.5  | 2.2       |
| 10°-20°   | 429.5  | 6.1       |
| 20°-30°   | 603.0  | 8.6       |
| 30°-40°   | 657.4  | 9.4       |
| 40°-50°   | 604.2  | 8.6       |
| 50°-60°   | 474.5  | 6.8       |
| 60°-70°   | 308.9  | 4.4       |
| 70°-80°   | 159.0  | 2.3       |
| 80°-90°   | 44.2   | 0.6       |
| 90°-100°  | 79.1   | 1.1       |
| 100°-110° | 251.2  | 3.6       |
| 110°-120° | 429.8  | 6.1       |
| 120°-130° | 565.3  | 8.1       |
| 130°-140° | 634.5  | 9.1       |
| 140°-150° | 622.2  | 8.9       |
| 150°-160° | 522.0  | 7.4       |
| 160°-170° | 346.2  | 4.9       |
| 170°-180° | 121.0  | 1.7       |
| 0°-30°    | 1189.0 | 17.0      |
| 0°-40°    | 1846.4 | 26.3      |
| 0°-60°    | 2925.1 | 41.7      |
| 0°-90°    | 3437.2 | 49.0      |
| 90°-120°  | 760.1  | 10.8      |
| 90°-150°  | 2582.2 | 36.8      |
| 90°-180°  | 3571.0 | 51.0      |
| 0°-180°   | 7008.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1670 | 1670  | 1670 | 1670  | 1670 |      |
| 5°   | 1670 | 1662  | 1642 | 1656  | 1651 | 158  |
| 15°  | 1588 | 1571  | 1520 | 1491  | 1476 | 447  |
| 25°  | 1441 | 1393  | 1293 | 1231  | 1209 | 663  |
| 35°  | 1242 | 1165  | 1032 | 937   | 903  | 777  |
| 45°  | 1015 | 914   | 756  | 648   | 612  | 784  |
| 55°  | 772  | 654   | 491  | 400   | 372  | 690  |
| 65°  | 521  | 399   | 263  | 212   | 207  | 517  |
| 75°  | 278  | 172   | 121  | 110   | 109  | 294  |
| 85°  | 65   | 33    | 29   | 29    | 29   | 75   |
| 90°  | 1    | 14    | 38   | 35    | 37   | 7    |
| 95°  | 56   | 67    | 69   | 69    | 67   | 63   |
| 105° | 232  | 235   | 237  | 239   | 239  | 245  |
| 115° | 431  | 438   | 436  | 434   | 431  | 427  |
| 125° | 627  | 637   | 634  | 630   | 629  | 561  |
| 135° | 812  | 823   | 826  | 825   | 822  | 627  |
| 145° | 985  | 993   | 999  | 1000  | 996  | 616  |
| 155° | 1126 | 1130  | 1133 | 1138  | 1135 | 519  |
| 165° | 1226 | 1224  | 1224 | 1232  | 1227 | 346  |
| 175° | 1275 | 1272  | 1270 | 1278  | 1271 | 121  |
| 180° | 1278 | 1278  | 1278 | 1278  | 1278 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1669.5 | 1669.5 | 1669.5 | 1669.5 | 1669.5 |
| 2.5°   | 1677.1 | 1669.5 | 1652.8 | 1668.1 | 1665.0 |
| 5°     | 1669.5 | 1661.9 | 1642.2 | 1655.9 | 1651.4 |
| 7.5°   | 1655.9 | 1646.9 | 1625.8 | 1631.6 | 1624.2 |
| 10°    | 1637.8 | 1627.2 | 1597.0 | 1592.4 | 1583.5 |
| 12.5°  | 1615.2 | 1601.5 | 1560.6 | 1551.7 | 1535.0 |
| 15°    | 1587.9 | 1571.2 | 1519.9 | 1491.3 | 1476.2 |
| 17.5°  | 1556.2 | 1532.0 | 1468.4 | 1435.3 | 1411.1 |
| 20°    | 1519.9 | 1489.7 | 1414.1 | 1376.4 | 1343.1 |
| 22.5°  | 1480.7 | 1445.9 | 1358.2 | 1306.9 | 1284.3 |
| 25°    | 1441.4 | 1393.0 | 1293.2 | 1231.4 | 1208.6 |
| 27.5°  | 1394.6 | 1343.1 | 1232.8 | 1161.9 | 1127.0 |
| 30°    | 1344.7 | 1287.2 | 1166.3 | 1089.3 | 1048.5 |
| 32.5°  | 1296.4 | 1226.8 | 1103.0 | 1012.3 | 974.4  |
| 35°    | 1242.0 | 1164.9 | 1032.0 | 936.8  | 903.4  |
| 37.5°  | 1189.1 | 1105.9 | 965.4  | 861.1  | 823.4  |
| 40°    | 1133.2 | 1042.6 | 896.0  | 788.7  | 749.4  |
| 42.5°  | 1075.7 | 979.1  | 826.5  | 714.6  | 676.9  |
| 45°    | 1015.3 | 914.0  | 755.5  | 648.1  | 611.9  |
| 47.5°  | 958.0  | 850.7  | 687.5  | 580.2  | 546.9  |
| 50°    | 894.4  | 787.2  | 621.0  | 516.6  | 485.0  |
| 52.5°  | 832.4  | 719.1  | 557.5  | 457.8  | 429.1  |
| 55°    | 772.0  | 654.2  | 491.0  | 400.4  | 371.7  |
| 57.5°  | 710.1  | 589.3  | 432.1  | 347.5  | 323.4  |
| 60°    | 646.6  | 525.7  | 370.1  | 293.2  | 269.0  |
| 62.5°  | 584.8  | 463.9  | 317.2  | 244.8  | 232.8  |
| 65°    | 521.3  | 398.8  | 262.9  | 211.6  | 206.9  |
| 67.5°  | 460.9  | 338.4  | 211.6  | 185.8  | 181.3  |
| 70°    | 397.4  | 279.5  | 175.2  | 160.2  | 154.0  |
| 72.5°  | 337.0  | 225.1  | 146.5  | 134.5  | 131.5  |
| 75°    | 277.9  | 172.2  | 120.9  | 110.3  | 108.9  |
| 77.5°  | 219.1  | 122.3  | 95.2   | 89.2   | 86.0   |
| 80°    | 164.6  | 87.7   | 72.4   | 66.6   | 66.6   |
| 82.5°  | 114.8  | 59.0   | 49.9   | 46.8   | 46.8   |
| 85°    | 64.9   | 33.2   | 28.7   | 28.7   | 28.7   |
| 87.5°  | 24.2   | 12.0   | 12.0   | 10.6   | 10.6   |
| 90°    | 1.1    | 13.8   | 37.8   | 35.4   | 36.6   |
| 92.5°  | 23.8   | 32.3   | 33.5   | 34.6   | 34.6   |
| 95°    | 56.2   | 67.1   | 69.0   | 69.0   | 67.1   |
| 97.5°  | 93.6   | 103.6  | 107.9  | 107.9  | 107.9  |
| 100°   | 136.7  | 145.6  | 148.7  | 148.7  | 147.5  |
| 102.5° | 182.2  | 188.7  | 193.0  | 194.1  | 193.0  |
| 105°   | 231.9  | 234.9  | 237.2  | 239.1  | 239.1  |
| 107.5° | 281.1  | 285.8  | 285.8  | 286.5  | 281.1  |
| 110°   | 328.9  | 335.1  | 335.1  | 335.1  | 332.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 380.5  | 387.1  | 385.9  | 382.8  | 380.5  |
| 115°   | 431.3  | 437.6  | 435.6  | 434.4  | 431.3  |
| 117.5° | 481.8  | 490.3  | 484.9  | 481.8  | 478.8  |
| 120°   | 532.7  | 541.1  | 532.7  | 532.7  | 529.2  |
| 122.5° | 578.9  | 589.7  | 584.3  | 581.2  | 578.9  |
| 125°   | 627.4  | 637.0  | 634.0  | 630.5  | 629.3  |
| 127.5° | 674.8  | 686.7  | 682.5  | 677.8  | 674.8  |
| 130°   | 719.0  | 733.0  | 731.0  | 728.7  | 724.5  |
| 132.5° | 768.7  | 779.5  | 780.3  | 774.9  | 771.8  |
| 135°   | 811.5  | 823.4  | 825.8  | 824.6  | 821.5  |
| 137.5° | 859.3  | 868.9  | 870.8  | 870.0  | 865.5  |
| 140°   | 901.2  | 910.9  | 916.3  | 916.3  | 912.0  |
| 142.5° | 944.4  | 954.0  | 957.0  | 958.3  | 954.0  |
| 145°   | 985.2  | 992.9  | 999.1  | 1000.3 | 996.0  |
| 147.5° | 1021.8 | 1031.4 | 1036.0 | 1037.9 | 1033.7 |
| 150°   | 1059.6 | 1066.1 | 1070.4 | 1073.8 | 1070.4 |
| 152.5° | 1093.1 | 1099.5 | 1105.0 | 1109.2 | 1105.0 |
| 155°   | 1126.5 | 1129.6 | 1133.1 | 1138.5 | 1135.0 |
| 157.5° | 1155.5 | 1157.7 | 1159.6 | 1167.4 | 1162.0 |
| 160°   | 1181.2 | 1183.6 | 1184.7 | 1191.2 | 1186.6 |
| 162.5° | 1205.1 | 1205.1 | 1206.3 | 1213.6 | 1208.2 |
| 165°   | 1225.6 | 1224.4 | 1224.4 | 1232.0 | 1226.7 |
| 167.5° | 1244.1 | 1240.5 | 1240.5 | 1248.3 | 1242.8 |
| 170°   | 1257.9 | 1254.8 | 1253.6 | 1261.3 | 1254.8 |
| 172.5° | 1267.5 | 1264.5 | 1263.2 | 1271.0 | 1264.5 |
| 175°   | 1275.3 | 1272.1 | 1269.8 | 1277.5 | 1271.0 |
| 177.5° | 1279.5 | 1276.4 | 1274.0 | 1280.6 | 1274.0 |
| 180°   | 1277.5 | 1277.5 | 1277.5 | 1277.5 | 1277.5 |

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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            | 12.23 | 12.38 | 13.21 | 14.50 | 7.37           | 8.19  | 8.34  | 9.18  | 10.46 |
|                 | 3H   | 13.06            | 13.80 | 14.04 | 14.79 | 16.10 | 8.54           | 9.28  | 9.53  | 10.27 | 11.58 |
|                 | 4H   | 13.66            | 14.35 | 14.65 | 15.34 | 16.66 | 8.98           | 9.68  | 9.98  | 10.67 | 11.99 |
|                 | 6H   | 14.06            | 14.70 | 15.07 | 15.70 | 17.03 | 9.29           | 9.93  | 10.29 | 10.93 | 12.26 |
|                 | 8H   | 14.18            | 14.79 | 15.19 | 15.80 | 17.13 | 9.37           | 9.98  | 10.38 | 10.99 | 12.32 |
|                 | 12H  | 14.23            | 14.81 | 15.25 | 15.82 | 17.17 | 9.41           | 9.98  | 10.42 | 10.99 | 12.34 |
| 4H              | 2H   | 11.42            | 12.11 | 12.42 | 13.11 | 14.42 | 7.96           | 8.65  | 8.96  | 9.65  | 10.96 |
|                 | 3H   | 13.22            | 13.80 | 14.23 | 14.82 | 16.15 | 9.29           | 9.86  | 10.30 | 10.89 | 12.22 |
|                 | 4H   | 13.90            | 14.43 | 14.92 | 15.44 | 16.80 | 9.82           | 10.35 | 10.84 | 11.36 | 12.72 |
|                 | 6H   | 14.39            | 14.85 | 15.42 | 15.89 | 17.24 | 10.22          | 10.67 | 11.25 | 11.71 | 13.06 |
|                 | 8H   | 14.56            | 14.98 | 15.59 | 16.01 | 17.38 | 10.34          | 10.76 | 11.37 | 11.79 | 13.16 |
|                 | 12H  | 14.64            | 15.02 | 15.69 | 16.07 | 17.44 | 10.39          | 10.78 | 11.44 | 11.82 | 13.19 |
| 8H              | 4H   | 13.86            | 14.29 | 14.89 | 15.32 | 16.68 | 10.09          | 10.51 | 11.12 | 11.54 | 12.91 |
|                 | 6H   | 14.40            | 14.75 | 15.46 | 15.83 | 17.19 | 10.58          | 10.93 | 11.64 | 12.01 | 13.37 |
|                 | 8H   | 14.61            | 14.92 | 15.67 | 15.97 | 17.36 | 10.76          | 11.07 | 11.82 | 12.13 | 13.51 |
|                 | 12H  | 14.73            | 15.00 | 15.80 | 16.06 | 17.48 | 10.86          | 11.13 | 11.93 | 12.19 | 13.61 |
| 12H             | 4H   | 13.81            | 14.19 | 14.86 | 15.24 | 16.61 | 10.09          | 10.47 | 11.14 | 11.52 | 12.89 |
|                 | 6H   | 14.38            | 14.69 | 15.44 | 15.75 | 17.13 | 10.63          | 10.93 | 11.69 | 11.99 | 13.37 |
|                 | 8H   | 14.58            | 14.85 | 15.65 | 15.91 | 17.33 | 10.82          | 11.09 | 11.89 | 12.14 | 13.57 |