

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: P915356

Luminaire Tested: DFN2DIP-TR3F0-060D040US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915356  
REPORT IS A COMBINATION OF REPORTS P900292 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-060D040US927-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

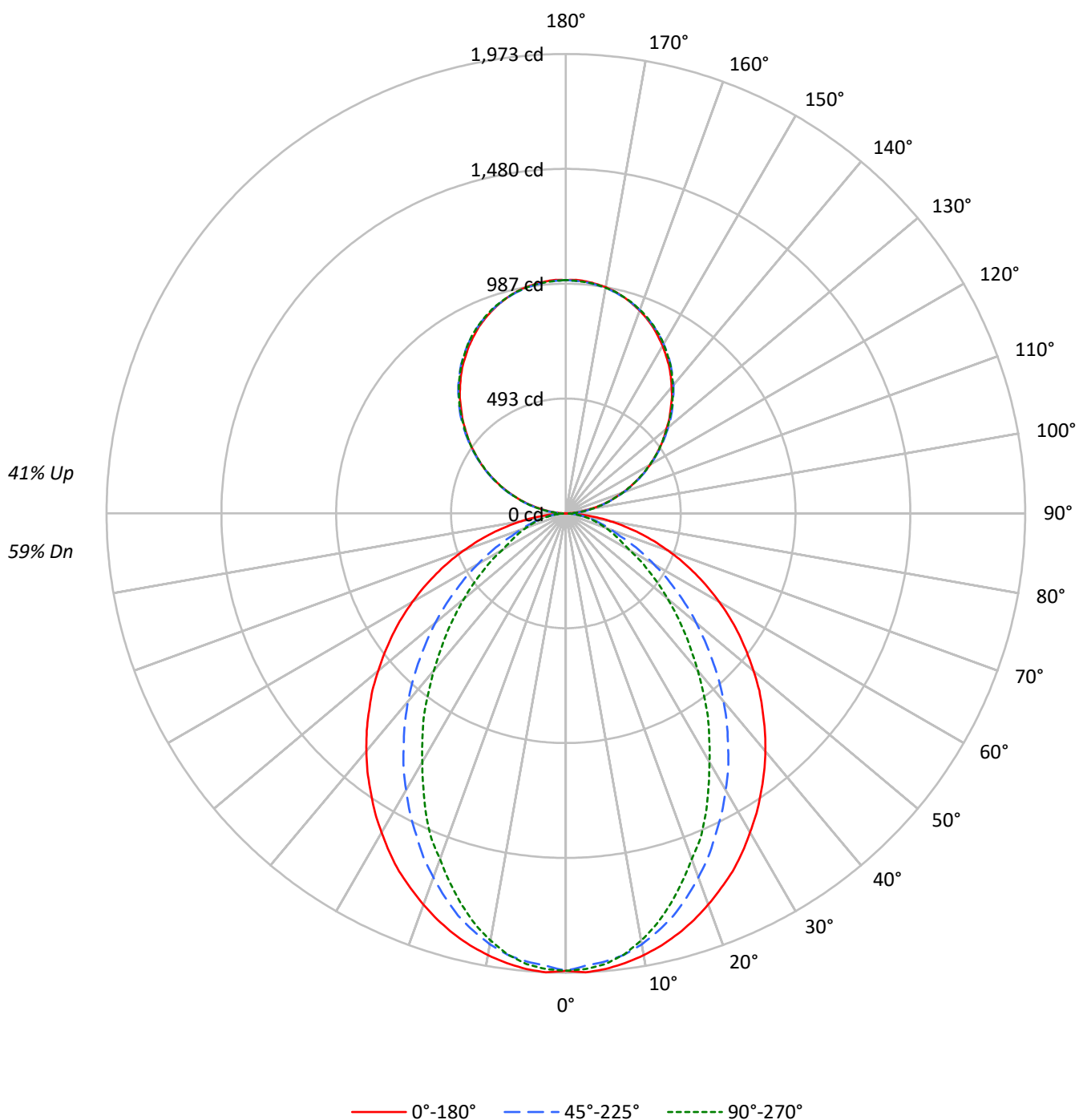
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6844.4 lumens  
Efficiency: N/A  
Efficacy: 78.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 86.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 |
| 1   | 100 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 56 |
| 2   | 92  | 85  | 79  | 74  | 86  | 79  | 74  | 70  | 69 | 65 | 62 | 60 | 57 | 55 | 52 | 50 | 48 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 44 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 44  | 39  | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 30  | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2448 | 2448 | 2448 |
| 5°  | 2451 | 2407 | 2423 |
| 10° | 2425 | 2358 | 2342 |
| 15° | 2390 | 2278 | 2219 |
| 20° | 2345 | 2169 | 2068 |
| 25° | 2298 | 2046 | 1923 |
| 30° | 2236 | 1921 | 1738 |
| 35° | 2175 | 1787 | 1577 |
| 40° | 2113 | 1648 | 1392 |
| 45° | 2041 | 1495 | 1224 |
| 50° | 1966 | 1340 | 1060 |
| 55° | 1888 | 1174 | 903  |
| 60° | 1798 | 1002 | 742  |
| 65° | 1694 | 826  | 666  |
| 70° | 1567 | 663  | 600  |
| 75° | 1408 | 580  | 543  |
| 80° | 1178 | 480  | 465  |
| 85° | 802  | 311  | 340  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2041 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 184.1  | 2.7       |
| 10°-20°   | 505.4  | 7.4       |
| 20°-30°   | 709.6  | 10.4      |
| 30°-40°   | 773.5  | 11.3      |
| 40°-50°   | 710.9  | 10.4      |
| 50°-60°   | 558.3  | 8.2       |
| 60°-70°   | 363.4  | 5.3       |
| 70°-80°   | 187.1  | 2.7       |
| 80°-90°   | 50.6   | 0.7       |
| 90°-100°  | 62.0   | 0.9       |
| 100°-110° | 197.0  | 2.9       |
| 110°-120° | 337.2  | 4.9       |
| 120°-130° | 443.5  | 6.5       |
| 130°-140° | 497.8  | 7.3       |
| 140°-150° | 488.1  | 7.1       |
| 150°-160° | 409.5  | 6.0       |
| 160°-170° | 271.5  | 4.0       |
| 170°-180° | 94.9   | 1.4       |
| 0°-30°    | 1399.1 | 20.4      |
| 0°-40°    | 2172.6 | 31.7      |
| 0°-60°    | 3441.9 | 50.3      |
| 0°-90°    | 4043.0 | 59.1      |
| 90°-120°  | 596.2  | 8.7       |
| 90°-150°  | 2025.6 | 29.6      |
| 90°-180°  | 2801.0 | 40.9      |
| 0°-180°   | 6844.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1964 | 1964  | 1964 | 1964  | 1964 |      |
| 5°   | 1964 | 1956  | 1932 | 1948  | 1943 | 186  |
| 15°  | 1868 | 1849  | 1788 | 1755  | 1737 | 527  |
| 25°  | 1696 | 1639  | 1522 | 1449  | 1422 | 780  |
| 35°  | 1461 | 1371  | 1214 | 1102  | 1063 | 915  |
| 45°  | 1195 | 1076  | 889  | 763   | 720  | 923  |
| 55°  | 908  | 770   | 578  | 471   | 437  | 812  |
| 65°  | 613  | 469   | 309  | 249   | 244  | 608  |
| 75°  | 327  | 203   | 142  | 130   | 128  | 346  |
| 85°  | 76   | 39    | 34   | 34    | 34   | 88   |
| 90°  | 1    | 11    | 30   | 28    | 29   | 7    |
| 95°  | 44   | 53    | 54   | 54    | 53   | 49   |
| 105° | 182  | 184   | 186  | 188   | 188  | 192  |
| 115° | 338  | 343   | 342  | 341   | 338  | 335  |
| 125° | 492  | 500   | 497  | 495   | 494  | 440  |
| 135° | 637  | 646   | 648  | 647   | 644  | 492  |
| 145° | 773  | 779   | 784  | 785   | 781  | 483  |
| 155° | 884  | 886   | 889  | 893   | 890  | 407  |
| 165° | 961  | 960   | 960  | 966   | 962  | 271  |
| 175° | 1000 | 998   | 996  | 1002  | 997  | 95   |
| 180° | 1002 | 1002  | 1002 | 1002  | 1002 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1964.5 | 1964.5 | 1964.5 | 1964.5 | 1964.5 |
| 2.5°   | 1973.3 | 1964.5 | 1944.8 | 1962.7 | 1959.1 |
| 5°     | 1964.5 | 1955.6 | 1932.4 | 1948.4 | 1943.1 |
| 7.5°   | 1948.4 | 1937.8 | 1913.0 | 1919.9 | 1911.1 |
| 10°    | 1927.1 | 1914.6 | 1879.2 | 1873.7 | 1863.1 |
| 12.5°  | 1900.5 | 1884.4 | 1836.4 | 1825.8 | 1806.2 |
| 15°    | 1868.4 | 1848.8 | 1788.4 | 1754.7 | 1736.9 |
| 17.5°  | 1831.1 | 1802.6 | 1727.9 | 1688.9 | 1660.4 |
| 20°    | 1788.4 | 1752.8 | 1664.0 | 1619.6 | 1580.4 |
| 22.5°  | 1742.2 | 1701.3 | 1598.1 | 1537.8 | 1511.2 |
| 25°    | 1696.1 | 1639.1 | 1521.8 | 1449.0 | 1422.2 |
| 27.5°  | 1641.0 | 1580.4 | 1450.6 | 1367.1 | 1326.2 |
| 30°    | 1582.3 | 1514.6 | 1372.4 | 1281.8 | 1233.7 |
| 32.5°  | 1525.3 | 1443.5 | 1297.9 | 1191.1 | 1146.6 |
| 35°    | 1461.4 | 1370.7 | 1214.3 | 1102.2 | 1063.0 |
| 37.5°  | 1399.2 | 1301.2 | 1136.1 | 1013.3 | 968.9  |
| 40°    | 1333.3 | 1226.8 | 1054.2 | 928.0  | 881.8  |
| 42.5°  | 1265.8 | 1152.1 | 972.5  | 840.8  | 796.5  |
| 45°    | 1194.7 | 1075.5 | 889.0  | 762.6  | 719.9  |
| 47.5°  | 1127.2 | 1001.0 | 809.0  | 682.6  | 643.6  |
| 50°    | 1052.5 | 926.3  | 730.7  | 607.9  | 570.8  |
| 52.5°  | 979.5  | 846.1  | 656.0  | 538.7  | 504.9  |
| 55°    | 908.4  | 769.8  | 577.7  | 471.2  | 437.4  |
| 57.5°  | 835.6  | 693.3  | 508.5  | 408.9  | 380.4  |
| 60°    | 760.9  | 618.7  | 435.5  | 345.0  | 316.5  |
| 62.5°  | 688.1  | 545.9  | 373.3  | 288.0  | 273.9  |
| 65°    | 613.4  | 469.3  | 309.3  | 249.0  | 243.5  |
| 67.5°  | 542.2  | 398.2  | 249.0  | 218.6  | 213.3  |
| 70°    | 467.5  | 328.9  | 206.1  | 188.5  | 181.3  |
| 72.5°  | 396.5  | 264.8  | 172.4  | 158.3  | 154.6  |
| 75°    | 327.1  | 202.6  | 142.2  | 129.8  | 128.1  |
| 77.5°  | 257.9  | 143.9  | 112.0  | 104.9  | 101.3  |
| 80°    | 193.7  | 103.1  | 85.2   | 78.3   | 78.3   |
| 82.5°  | 135.1  | 69.4   | 58.6   | 55.1   | 55.1   |
| 85°    | 76.4   | 39.1   | 33.7   | 33.7   | 33.7   |
| 87.5°  | 28.5   | 14.2   | 14.2   | 12.4   | 12.4   |
| 90°    | 0.9    | 10.9   | 29.6   | 27.8   | 28.7   |
| 92.5°  | 18.7   | 25.3   | 26.3   | 27.2   | 27.2   |
| 95°    | 44.1   | 52.6   | 54.1   | 54.1   | 52.6   |
| 97.5°  | 73.4   | 81.3   | 84.6   | 84.6   | 84.6   |
| 100°   | 107.3  | 114.2  | 116.6  | 116.6  | 115.7  |
| 102.5° | 142.9  | 148.1  | 151.4  | 152.3  | 151.4  |
| 105°   | 181.9  | 184.3  | 186.1  | 187.6  | 187.6  |
| 107.5° | 220.5  | 224.2  | 224.2  | 224.7  | 220.5  |
| 110°   | 258.0  | 262.8  | 262.8  | 262.8  | 260.5  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 298.5  | 303.6  | 302.7  | 300.3  | 298.5  |
| 115°   | 338.3  | 343.3  | 341.7  | 340.8  | 338.3  |
| 117.5° | 377.9  | 384.6  | 380.4  | 377.9  | 375.6  |
| 120°   | 417.9  | 424.5  | 417.9  | 417.9  | 415.1  |
| 122.5° | 454.1  | 462.6  | 458.4  | 455.9  | 454.1  |
| 125°   | 492.2  | 499.7  | 497.3  | 494.6  | 493.7  |
| 127.5° | 529.3  | 538.7  | 535.4  | 531.7  | 529.3  |
| 130°   | 564.0  | 575.0  | 573.5  | 571.6  | 568.3  |
| 132.5° | 603.0  | 611.5  | 612.1  | 607.8  | 605.5  |
| 135°   | 636.6  | 645.9  | 647.8  | 646.8  | 644.4  |
| 137.5° | 674.1  | 681.6  | 683.1  | 682.5  | 678.9  |
| 140°   | 706.9  | 714.5  | 718.7  | 718.7  | 715.4  |
| 142.5° | 740.8  | 748.4  | 750.8  | 751.7  | 748.4  |
| 145°   | 772.9  | 778.9  | 783.7  | 784.7  | 781.3  |
| 147.5° | 801.5  | 809.1  | 812.7  | 814.2  | 810.9  |
| 150°   | 831.2  | 836.3  | 839.6  | 842.3  | 839.6  |
| 152.5° | 857.5  | 862.5  | 866.8  | 870.1  | 866.8  |
| 155°   | 883.7  | 886.1  | 888.8  | 893.1  | 890.3  |
| 157.5° | 906.4  | 908.2  | 909.7  | 915.8  | 911.5  |
| 160°   | 926.6  | 928.4  | 929.3  | 934.5  | 930.8  |
| 162.5° | 945.3  | 945.3  | 946.3  | 952.0  | 947.8  |
| 165°   | 961.4  | 960.4  | 960.4  | 966.5  | 962.3  |
| 167.5° | 975.9  | 973.1  | 973.1  | 979.2  | 974.9  |
| 170°   | 986.7  | 984.3  | 983.4  | 989.4  | 984.3  |
| 172.5° | 994.3  | 991.9  | 990.9  | 997.0  | 991.9  |
| 175°   | 1000.4 | 997.9  | 996.1  | 1002.1 | 997.0  |
| 177.5° | 1003.7 | 1001.2 | 999.4  | 1004.6 | 999.4  |
| 180°   | 1002.1 | 1002.1 | 1002.1 | 1002.1 | 1002.1 |

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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 | 11.01            | 11.92 | 11.89 | 12.82 | 13.96 | 6.99           | 7.90  | 7.87  | 8.80  | 9.93  |
|                 | 3H   | 12.69            | 13.50 | 13.58 | 14.41 | 15.57 | 8.18           | 8.99  | 9.07  | 9.90  | 11.06 |
|                 | 4H   | 13.29            | 14.06 | 14.20 | 14.97 | 16.15 | 8.63           | 9.40  | 9.54  | 10.31 | 11.48 |
|                 | 6H   | 13.71            | 14.42 | 14.63 | 15.34 | 16.52 | 8.95           | 9.66  | 9.87  | 10.58 | 11.76 |
|                 | 8H   | 13.83            | 14.51 | 14.76 | 15.44 | 16.63 | 9.04           | 9.71  | 9.97  | 10.65 | 11.83 |
|                 | 12H  | 13.89            | 14.54 | 14.83 | 15.47 | 16.68 | 9.08           | 9.72  | 10.02 | 10.65 | 11.86 |
| 4H              | 2H   | 11.04            | 11.81 | 11.95 | 12.72 | 13.89 | 7.59           | 8.36  | 8.50  | 9.27  | 10.44 |
|                 | 3H   | 12.86            | 13.50 | 13.79 | 14.45 | 15.63 | 8.94           | 9.58  | 9.86  | 10.52 | 11.71 |
|                 | 4H   | 13.55            | 14.13 | 14.49 | 15.07 | 16.29 | 9.49           | 10.07 | 10.42 | 11.01 | 12.22 |
|                 | 6H   | 14.06            | 14.56 | 15.01 | 15.53 | 16.74 | 9.90           | 10.40 | 10.85 | 11.37 | 12.58 |
|                 | 8H   | 14.23            | 14.70 | 15.19 | 15.66 | 16.89 | 10.03          | 10.50 | 10.98 | 11.45 | 12.68 |
|                 | 12H  | 14.33            | 14.75 | 15.30 | 15.72 | 16.96 | 10.10          | 10.52 | 11.07 | 11.49 | 12.72 |
| 8H              | 4H   | 13.52            | 13.99 | 14.48 | 14.95 | 16.18 | 9.77           | 10.23 | 10.72 | 11.19 | 12.42 |
|                 | 6H   | 14.08            | 14.47 | 15.06 | 15.47 | 16.69 | 10.28          | 10.67 | 11.26 | 11.66 | 12.89 |
|                 | 8H   | 14.29            | 14.63 | 15.28 | 15.62 | 16.87 | 10.47          | 10.81 | 11.45 | 11.80 | 13.04 |
|                 | 12H  | 14.43            | 14.73 | 15.42 | 15.71 | 17.00 | 10.58          | 10.88 | 11.57 | 11.86 | 13.16 |
| 12H             | 4H   | 13.48            | 13.90 | 14.45 | 14.87 | 16.11 | 9.77           | 10.19 | 10.74 | 11.17 | 12.40 |
|                 | 6H   | 14.06            | 14.40 | 15.04 | 15.39 | 16.63 | 10.33          | 10.67 | 11.31 | 11.66 | 12.90 |
|                 | 8H   | 14.28            | 14.58 | 15.26 | 15.56 | 16.85 | 10.54          | 10.84 | 11.52 | 11.82 | 13.11 |