

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: P923583

Luminaire Tested: DFN2DIP-TR3F0-070D080US940-RLONL

Issue Date: 11/21/2024

**Test Information**

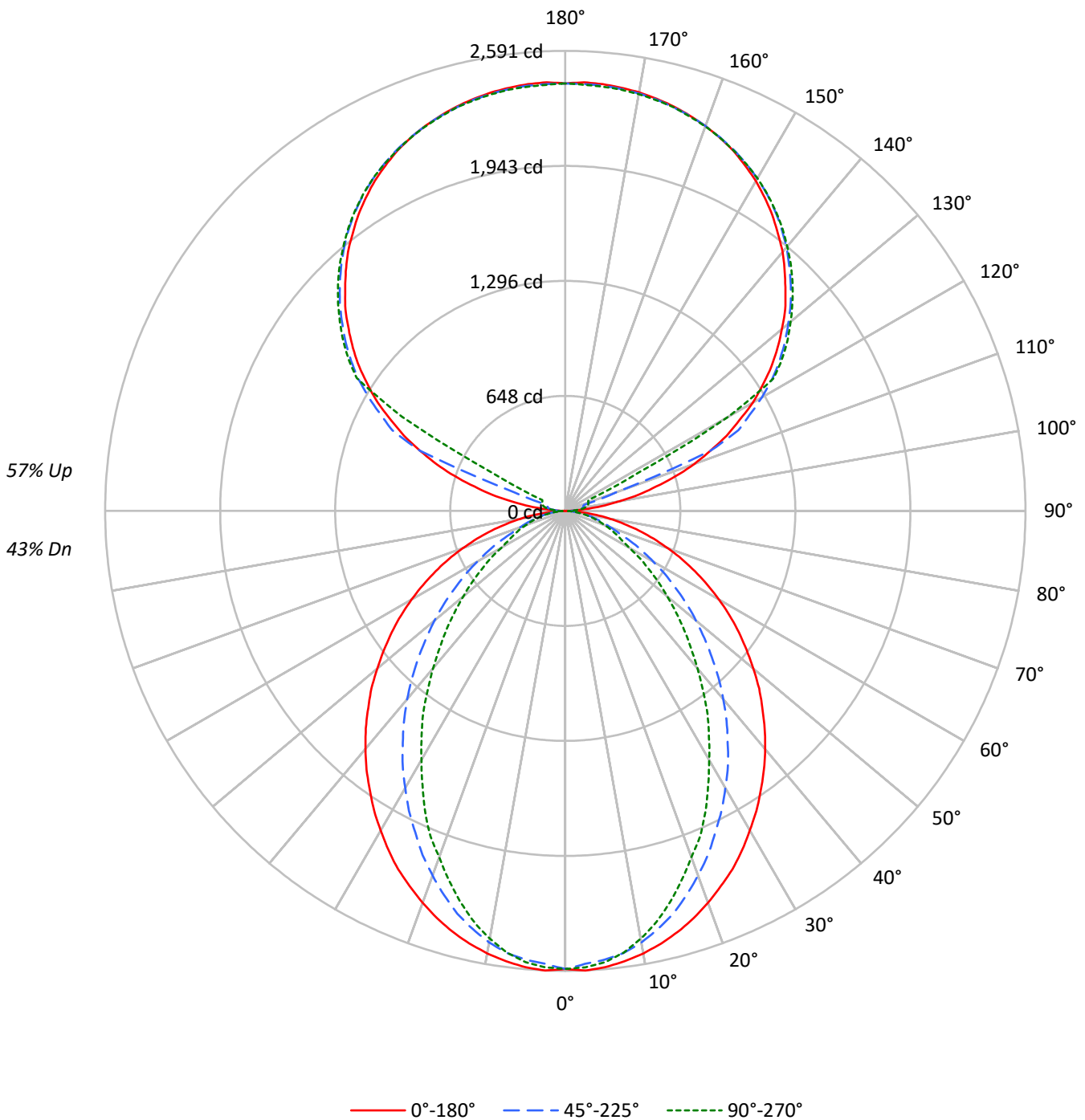
Test Method: LM-79-2019  
Report Number: P923583  
REPORT IS A COMBINATION OF REPORTS P901870 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D080US940-RLLONL  
Description: 3 foot, 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: 12368.0 lumens  
Efficiency: N/A  
Efficacy: 94.2 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): 131.3  
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





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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 50 | 50 | 50 | 43 |    |    |    | 43 |
| 1   | 97  | 92  | 89  | 85  | 88 | 85 | 82 | 79 | 70 | 68 | 66 | 57 | 55 | 54 | 44 | 44 | 43 | 37 |    |    |    | 37 |
| 2   | 88  | 81  | 75  | 70  | 81 | 75 | 70 | 65 | 62 | 58 | 55 | 50 | 48 | 46 | 40 | 38 | 37 | 32 |    |    |    | 32 |
| 3   | 81  | 72  | 65  | 59  | 74 | 66 | 60 | 55 | 55 | 51 | 47 | 45 | 42 | 39 | 36 | 33 | 32 | 27 |    |    |    | 27 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 49 | 44 | 40 | 40 | 37 | 34 | 32 | 30 | 28 | 24 |    |    |    | 24 |
| 5   | 68  | 57  | 49  | 43  | 62 | 53 | 46 | 41 | 44 | 39 | 35 | 36 | 33 | 30 | 29 | 26 | 24 | 21 |    |    |    | 21 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 40 | 35 | 31 | 33 | 29 | 26 | 26 | 24 | 22 | 19 |    |    |    | 19 |
| 7   | 58  | 46  | 39  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 | 17 |    |    |    | 17 |
| 8   | 54  | 42  | 35  | 29  | 49 | 39 | 32 | 28 | 33 | 28 | 24 | 28 | 24 | 21 | 22 | 20 | 17 | 15 |    |    |    | 15 |
| 9   | 50  | 38  | 31  | 26  | 46 | 36 | 29 | 25 | 30 | 25 | 22 | 25 | 22 | 19 | 21 | 18 | 16 | 14 |    |    |    | 14 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 27 | 22 | 28 | 23 | 20 | 24 | 20 | 17 | 19 | 16 | 14 | 12 |    |    |    | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3215 | 3215 | 3215 |
| 5°  | 3218 | 3161 | 3182 |
| 10° | 3185 | 3096 | 3076 |
| 15° | 3139 | 2991 | 2914 |
| 20° | 3079 | 2848 | 2716 |
| 25° | 3018 | 2687 | 2525 |
| 30° | 2936 | 2523 | 2283 |
| 35° | 2856 | 2347 | 2071 |
| 40° | 2775 | 2164 | 1828 |
| 45° | 2680 | 1963 | 1607 |
| 50° | 2582 | 1759 | 1392 |
| 55° | 2479 | 1542 | 1186 |
| 60° | 2361 | 1315 | 974  |
| 65° | 2224 | 1086 | 874  |
| 70° | 2058 | 871  | 788  |
| 75° | 1849 | 762  | 713  |
| 80° | 1548 | 631  | 611  |
| 85° | 1053 | 408  | 447  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2680 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 241.8   | 2.0       |
| 10°-20°   | 663.7   | 5.4       |
| 20°-30°   | 931.9   | 7.5       |
| 30°-40°   | 1015.8  | 8.2       |
| 40°-50°   | 933.6   | 7.5       |
| 50°-60°   | 733.2   | 5.9       |
| 60°-70°   | 477.3   | 3.9       |
| 70°-80°   | 245.7   | 2.0       |
| 80°-90°   | 66.9    | 0.5       |
| 90°-100°  | 79.4    | 0.6       |
| 100°-110° | 295.9   | 2.4       |
| 110°-120° | 784.9   | 6.3       |
| 120°-130° | 1301.8  | 10.5      |
| 130°-140° | 1382.8  | 11.2      |
| 140°-150° | 1285.1  | 10.4      |
| 150°-160° | 1033.2  | 8.4       |
| 160°-170° | 665.8   | 5.4       |
| 170°-180° | 229.2   | 1.9       |
| 0°-30°    | 1837.4  | 14.9      |
| 0°-40°    | 2853.2  | 23.1      |
| 0°-60°    | 4520.0  | 36.5      |
| 0°-90°    | 5309.9  | 42.9      |
| 90°-120°  | 1160.2  | 9.4       |
| 90°-150°  | 5129.9  | 41.5      |
| 90°-180°  | 7058.0  | 57.1      |
| 0°-180°   | 12368.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2580 | 2580  | 2580 | 2580  | 2580 |      |
| 5°   | 2580 | 2568  | 2538 | 2559  | 2552 | 245  |
| 15°  | 2454 | 2428  | 2349 | 2304  | 2281 | 691  |
| 25°  | 2227 | 2152  | 1998 | 1903  | 1868 | 1024 |
| 35°  | 1919 | 1800  | 1595 | 1448  | 1396 | 1201 |
| 45°  | 1569 | 1412  | 1167 | 1002  | 946  | 1212 |
| 55°  | 1193 | 1011  | 759  | 619   | 574  | 1066 |
| 65°  | 806  | 616   | 406  | 327   | 320  | 799  |
| 75°  | 430  | 266   | 187  | 170   | 168  | 454  |
| 85°  | 100  | 51    | 44   | 44    | 44   | 115  |
| 90°  | 2    | 21    | 35   | 44    | 47   | 12   |
| 95°  | 113  | 56    | 68   | 77    | 75   | 134  |
| 105° | 530  | 582   | 106  | 125   | 132  | 566  |
| 115° | 1002 | 1031  | 1075 | 268   | 143  | 986  |
| 125° | 1416 | 1439  | 1472 | 1484  | 1489 | 1263 |
| 135° | 1753 | 1780  | 1796 | 1814  | 1810 | 1354 |
| 145° | 2033 | 2031  | 2061 | 2073  | 2064 | 1272 |
| 155° | 2238 | 2223  | 2244 | 2254  | 2240 | 1032 |
| 165° | 2359 | 2348  | 2354 | 2366  | 2354 | 666  |
| 175° | 2413 | 2400  | 2404 | 2416  | 2399 | 230  |
| 180° | 2408 | 2408  | 2408 | 2408  | 2408 |      |



TEST NUMBER: P923583

CATALOG NUMBER: DFN2DIP-TR3F0-070D080US940-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2579.8 | 2579.8 | 2579.8 | 2579.8 | 2579.8 |
| 2.5°   | 2591.4 | 2579.8 | 2554.0 | 2577.6 | 2572.9 |
| 5°     | 2579.8 | 2568.1 | 2537.7 | 2558.8 | 2551.8 |
| 7.5°   | 2558.8 | 2544.9 | 2512.2 | 2521.3 | 2509.7 |
| 10°    | 2530.8 | 2514.4 | 2467.8 | 2460.7 | 2446.8 |
| 12.5°  | 2495.8 | 2474.8 | 2411.6 | 2397.7 | 2371.9 |
| 15°    | 2453.7 | 2427.9 | 2348.7 | 2304.4 | 2281.1 |
| 17.5°  | 2404.7 | 2367.3 | 2269.2 | 2217.9 | 2180.5 |
| 20°    | 2348.7 | 2301.9 | 2185.2 | 2127.0 | 2075.5 |
| 22.5°  | 2288.0 | 2234.3 | 2098.7 | 2019.5 | 1984.6 |
| 25°    | 2227.3 | 2152.5 | 1998.4 | 1902.8 | 1867.7 |
| 27.5°  | 2155.0 | 2075.5 | 1905.1 | 1795.4 | 1741.6 |
| 30°    | 2078.0 | 1989.0 | 1802.2 | 1683.4 | 1620.2 |
| 32.5°  | 2003.1 | 1895.7 | 1704.4 | 1564.2 | 1505.7 |
| 35°    | 1919.1 | 1800.0 | 1594.7 | 1447.6 | 1396.1 |
| 37.5°  | 1837.5 | 1708.9 | 1491.9 | 1330.6 | 1272.5 |
| 40°    | 1751.0 | 1611.1 | 1384.4 | 1218.7 | 1158.0 |
| 42.5°  | 1662.3 | 1513.0 | 1277.1 | 1104.2 | 1046.1 |
| 45°    | 1569.0 | 1412.4 | 1167.4 | 1001.5 | 945.5  |
| 47.5°  | 1480.2 | 1314.6 | 1062.4 | 896.4  | 845.2  |
| 50°    | 1382.2 | 1216.5 | 959.6  | 798.3  | 749.6  |
| 52.5°  | 1286.3 | 1111.2 | 861.5  | 707.4  | 663.1  |
| 55°    | 1192.9 | 1010.8 | 758.7  | 618.8  | 574.4  |
| 57.5°  | 1097.3 | 910.5  | 667.8  | 537.0  | 499.6  |
| 60°    | 999.3  | 812.4  | 571.9  | 453.1  | 415.6  |
| 62.5°  | 903.6  | 716.8  | 490.2  | 378.3  | 359.6  |
| 65°    | 805.5  | 616.3  | 406.3  | 327.0  | 319.8  |
| 67.5°  | 712.1  | 522.9  | 327.0  | 287.0  | 280.2  |
| 70°    | 614.0  | 431.9  | 270.7  | 247.4  | 238.0  |
| 72.5°  | 520.7  | 347.8  | 226.4  | 207.9  | 203.1  |
| 75°    | 429.5  | 266.0  | 186.7  | 170.4  | 168.2  |
| 77.5°  | 338.6  | 189.0  | 147.1  | 137.7  | 133.0  |
| 80°    | 254.4  | 135.5  | 112.0  | 102.8  | 102.8  |
| 82.5°  | 177.4  | 91.1   | 77.0   | 72.3   | 72.3   |
| 85°    | 100.3  | 51.3   | 44.3   | 44.3   | 44.3   |
| 87.5°  | 37.4   | 18.5   | 18.5   | 16.3   | 16.3   |
| 90°    | 1.7    | 20.9   | 34.8   | 43.6   | 47.0   |
| 92.5°  | 43.6   | 36.6   | 41.8   | 45.3   | 47.0   |
| 95°    | 113.2  | 55.6   | 67.9   | 76.8   | 74.9   |
| 97.5°  | 203.8  | 61.0   | 88.7   | 94.2   | 95.8   |
| 100°   | 308.4  | 69.7   | 99.3   | 113.2  | 116.6  |
| 102.5° | 423.3  | 419.9  | 102.8  | 121.8  | 127.2  |
| 105°   | 529.6  | 581.9  | 106.3  | 125.4  | 132.4  |
| 107.5° | 653.3  | 696.7  | 109.9  | 128.9  | 135.9  |
| 110°   | 771.9  | 808.2  | 305.0  | 130.7  | 137.6  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 883.3  | 914.5  | 885.0  | 134.0  | 139.5  |
| 115°   | 1001.7 | 1031.3 | 1074.9 | 268.3  | 142.9  |
| 117.5° | 1104.5 | 1139.2 | 1169.0 | 919.7  | 463.4  |
| 120°   | 1219.5 | 1245.5 | 1277.0 | 1297.9 | 1062.7 |
| 122.5° | 1316.9 | 1344.9 | 1379.8 | 1390.2 | 1392.0 |
| 125°   | 1416.2 | 1439.0 | 1472.0 | 1484.3 | 1489.4 |
| 127.5° | 1506.8 | 1531.2 | 1557.6 | 1574.8 | 1576.5 |
| 130°   | 1592.2 | 1620.1 | 1639.2 | 1658.5 | 1656.8 |
| 132.5° | 1679.4 | 1702.1 | 1721.2 | 1736.9 | 1735.2 |
| 135°   | 1752.6 | 1780.5 | 1796.0 | 1813.6 | 1810.1 |
| 137.5° | 1829.2 | 1850.0 | 1867.6 | 1885.0 | 1879.8 |
| 140°   | 1904.0 | 1918.1 | 1937.2 | 1952.8 | 1944.1 |
| 142.5° | 1966.9 | 1979.1 | 2001.6 | 2015.5 | 2006.8 |
| 145°   | 2033.1 | 2031.2 | 2060.8 | 2073.0 | 2064.3 |
| 147.5° | 2090.4 | 2085.3 | 2114.8 | 2123.5 | 2116.7 |
| 150°   | 2146.3 | 2134.0 | 2162.0 | 2172.3 | 2163.6 |
| 152.5° | 2193.3 | 2179.3 | 2205.4 | 2216.0 | 2203.8 |
| 155°   | 2238.5 | 2223.0 | 2243.9 | 2254.2 | 2240.4 |
| 157.5° | 2275.1 | 2261.3 | 2277.0 | 2289.2 | 2275.1 |
| 160°   | 2306.6 | 2296.1 | 2306.6 | 2316.9 | 2304.7 |
| 162.5° | 2334.3 | 2324.0 | 2332.6 | 2344.8 | 2329.1 |
| 165°   | 2358.8 | 2348.4 | 2353.6 | 2365.7 | 2353.6 |
| 167.5° | 2377.9 | 2367.4 | 2372.8 | 2385.0 | 2369.3 |
| 170°   | 2393.7 | 2383.1 | 2386.7 | 2398.9 | 2383.1 |
| 172.5° | 2404.1 | 2393.7 | 2397.2 | 2409.4 | 2393.7 |
| 175°   | 2412.7 | 2400.5 | 2404.1 | 2416.2 | 2398.9 |
| 177.5° | 2416.2 | 2404.1 | 2405.8 | 2418.1 | 2402.4 |
| 180°   | 2407.5 | 2407.5 | 2407.5 | 2407.5 | 2407.5 |



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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 | 10.45            | 11.23 | 11.48 | 12.26 | 13.63 | 6.43           | 7.21  | 7.45  | 8.23  | 9.60  |
|                 | 3H   | 12.12            | 12.81 | 13.15 | 13.85 | 15.24 | 7.61           | 8.30  | 8.64  | 9.34  | 10.73 |
|                 | 4H   | 12.72            | 13.37 | 13.76 | 14.41 | 15.81 | 8.05           | 8.71  | 9.10  | 9.75  | 11.15 |
|                 | 6H   | 13.13            | 13.73 | 14.18 | 14.77 | 16.19 | 8.37           | 8.97  | 9.42  | 10.01 | 11.42 |
|                 | 8H   | 13.25            | 13.82 | 14.31 | 14.88 | 16.29 | 8.45           | 9.03  | 9.51  | 10.09 | 11.49 |
|                 | 12H  | 13.31            | 13.85 | 14.37 | 14.90 | 16.33 | 8.49           | 9.04  | 9.56  | 10.09 | 11.52 |
| 4H              | 2H   | 10.46            | 11.12 | 11.52 | 12.16 | 13.56 | 7.02           | 7.67  | 8.07  | 8.71  | 10.11 |
|                 | 3H   | 12.28            | 12.82 | 13.34 | 13.89 | 15.30 | 8.35           | 8.90  | 9.41  | 9.96  | 11.38 |
|                 | 4H   | 12.96            | 13.46 | 14.03 | 14.52 | 15.95 | 8.89           | 9.39  | 9.96  | 10.45 | 11.88 |
|                 | 6H   | 13.46            | 13.89 | 14.54 | 14.97 | 16.40 | 9.30           | 9.73  | 10.38 | 10.81 | 12.24 |
|                 | 8H   | 13.63            | 14.03 | 14.71 | 15.11 | 16.55 | 9.43           | 9.83  | 10.50 | 10.90 | 12.35 |
|                 | 12H  | 13.72            | 14.08 | 14.81 | 15.17 | 16.62 | 9.49           | 9.85  | 10.58 | 10.94 | 12.38 |
| 8H              | 4H   | 12.92            | 13.32 | 14.00 | 14.40 | 15.84 | 9.17           | 9.57  | 10.24 | 10.64 | 12.08 |
|                 | 6H   | 13.48            | 13.81 | 14.57 | 14.92 | 16.36 | 9.67           | 10.00 | 10.77 | 11.12 | 12.56 |
|                 | 8H   | 13.69            | 13.98 | 14.79 | 15.07 | 16.53 | 9.86           | 10.15 | 10.96 | 11.25 | 12.71 |
|                 | 12H  | 13.82            | 14.07 | 14.92 | 15.16 | 16.66 | 9.97           | 10.23 | 11.08 | 11.32 | 12.82 |
| 12H             | 4H   | 12.87            | 13.23 | 13.96 | 14.32 | 15.77 | 9.17           | 9.53  | 10.26 | 10.61 | 12.06 |
|                 | 6H   | 13.45            | 13.74 | 14.56 | 14.84 | 16.30 | 9.72           | 10.01 | 10.82 | 11.11 | 12.57 |
|                 | 8H   | 13.66            | 13.92 | 14.77 | 15.01 | 16.51 | 9.92           | 10.18 | 11.03 | 11.27 | 12.77 |