

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: P920534

Luminaire Tested: DFN2DIP-SQ4F0-120D090US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

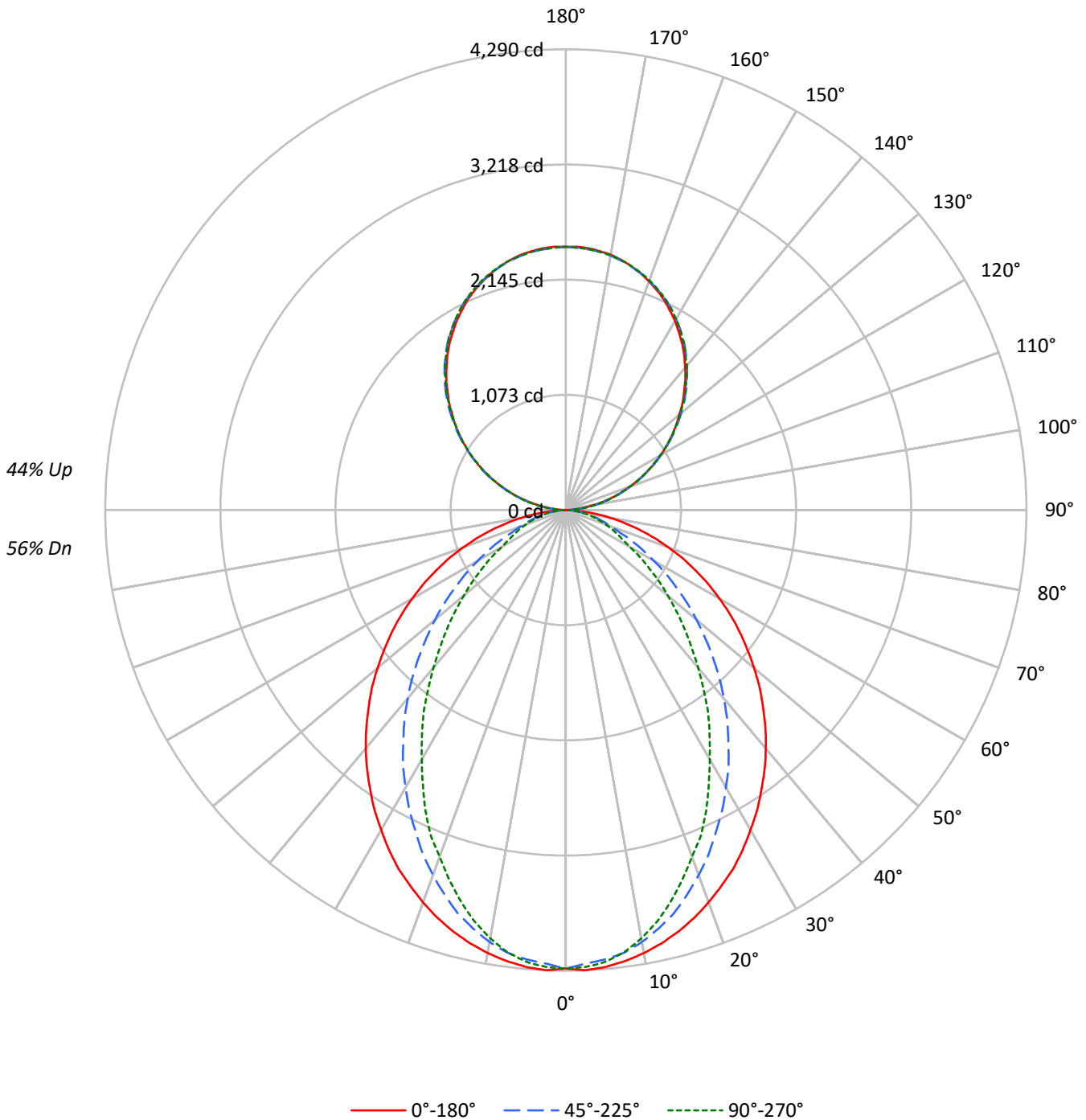
Test Method: LM-79-2019  
Report Number: P920534  
REPORT IS A COMBINATION OF REPORTS P900126 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-120D090US935-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15640.0 lumens  
Efficiency: N/A  
Efficacy: 84.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 184.3  
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

TEST NUMBER: P920534  
CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US935-RLFL

### Luminous Intensity Polar Plot





TEST NUMBER: P920534

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 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 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 | 56 |    |    |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 55 | 54 | 53 | 48 |    |    |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 49 | 47 | 46 | 41 |    |    |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 | 36 |    |    |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 | 31 |    |    |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 30 | 27 |    |    |
| 6   | 65  | 53  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 31 | 33 | 30 | 27 | 24 |    |    |
| 7   | 61  | 48  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 | 22 |    |    |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 | 20 |    |    |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 | 18 |    |    |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 | 16 |    |    |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2996 | 2996 | 2996 |
| 5°  | 3001 | 2949 | 2969 |
| 10° | 2971 | 2892 | 2873 |
| 15° | 2930 | 2797 | 2724 |
| 20° | 2876 | 2666 | 2542 |
| 25° | 2821 | 2519 | 2365 |
| 30° | 2746 | 2368 | 2141 |
| 35° | 2673 | 2205 | 1945 |
| 40° | 2599 | 2037 | 1719 |
| 45° | 2513 | 1851 | 1514 |
| 50° | 2424 | 1662 | 1314 |
| 55° | 2331 | 1461 | 1122 |
| 60° | 2223 | 1250 | 925  |
| 65° | 2099 | 1036 | 833  |
| 70° | 1949 | 836  | 755  |
| 75° | 1760 | 739  | 689  |
| 80° | 1486 | 621  | 600  |
| 85° | 1035 | 418  | 457  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2513 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 400.2   | 2.6       |
| 10°-20°   | 1098.7  | 7.0       |
| 20°-30°   | 1542.5  | 9.9       |
| 30°-40°   | 1681.4  | 10.8      |
| 40°-50°   | 1545.4  | 9.9       |
| 50°-60°   | 1213.7  | 7.8       |
| 60°-70°   | 790.0   | 5.1       |
| 70°-80°   | 406.7   | 2.6       |
| 80°-90°   | 110.8   | 0.7       |
| 90°-100°  | 151.6   | 1.0       |
| 100°-110° | 481.8   | 3.1       |
| 110°-120° | 824.6   | 5.3       |
| 120°-130° | 1084.4  | 6.9       |
| 130°-140° | 1217.2  | 7.8       |
| 140°-150° | 1193.6  | 7.6       |
| 150°-160° | 1001.3  | 6.4       |
| 160°-170° | 664.0   | 4.2       |
| 170°-180° | 232.1   | 1.5       |
| 0°-30°    | 3041.3  | 19.4      |
| 0°-40°    | 4722.7  | 30.2      |
| 0°-60°    | 7481.7  | 47.8      |
| 0°-90°    | 8789.1  | 56.2      |
| 90°-120°  | 1458.0  | 9.3       |
| 90°-150°  | 4953.4  | 31.7      |
| 90°-180°  | 6851.0  | 43.8      |
| 0°-180°   | 15640.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4270 | 4270  | 4270 | 4270  | 4270 |      |
| 5°   | 4270 | 4251  | 4200 | 4235  | 4224 | 405  |
| 15°  | 4062 | 4019  | 3888 | 3814  | 3776 | 1144 |
| 25°  | 3687 | 3563  | 3308 | 3150  | 3091 | 1696 |
| 35°  | 3177 | 2980  | 2640 | 2396  | 2311 | 1988 |
| 45°  | 2597 | 2338  | 1932 | 1658  | 1565 | 2006 |
| 55°  | 1975 | 1673  | 1256 | 1024  | 951  | 1764 |
| 65°  | 1333 | 1020  | 672  | 541   | 529  | 1322 |
| 75°  | 711  | 440   | 309  | 282   | 278  | 752  |
| 85°  | 166  | 85    | 73   | 73    | 73   | 191  |
| 90°  | 2    | 27    | 72   | 68    | 70   | 15   |
| 95°  | 108  | 128   | 132  | 132   | 128  | 120  |
| 105° | 445  | 451   | 455  | 459   | 459  | 469  |
| 115° | 828  | 839   | 836  | 833   | 828  | 818  |
| 125° | 1204 | 1222  | 1216 | 1209  | 1207 | 1076 |
| 135° | 1557 | 1580  | 1584 | 1582  | 1576 | 1203 |
| 145° | 1890 | 1905  | 1916 | 1919  | 1911 | 1181 |
| 155° | 2161 | 2167  | 2174 | 2184  | 2177 | 995  |
| 165° | 2351 | 2349  | 2349 | 2364  | 2353 | 663  |
| 175° | 2446 | 2440  | 2436 | 2451  | 2438 | 232  |
| 180° | 2451 | 2451  | 2451 | 2451  | 2451 |      |



TEST NUMBER: P920534

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4270.2 | 4270.2 | 4270.2 | 4270.2 | 4270.2 |
| 2.5°   | 4289.5 | 4270.2 | 4227.6 | 4266.5 | 4258.7 |
| 5°     | 4270.2 | 4250.9 | 4200.5 | 4235.3 | 4223.9 |
| 7.5°   | 4235.3 | 4212.3 | 4158.3 | 4173.4 | 4154.1 |
| 10°    | 4189.0 | 4162.0 | 4084.8 | 4073.0 | 4050.0 |
| 12.5°  | 4131.2 | 4096.4 | 3991.8 | 3968.9 | 3926.2 |
| 15°    | 4061.5 | 4018.9 | 3887.7 | 3814.2 | 3775.7 |
| 17.5°  | 3980.3 | 3918.4 | 3756.0 | 3671.2 | 3609.3 |
| 20°    | 3887.7 | 3810.2 | 3617.1 | 3520.7 | 3435.4 |
| 22.5°  | 3787.2 | 3698.2 | 3474.0 | 3342.7 | 3285.0 |
| 25°    | 3686.8 | 3562.9 | 3307.9 | 3149.6 | 3091.4 |
| 27.5°  | 3567.0 | 3435.4 | 3153.3 | 2971.7 | 2882.7 |
| 30°    | 3439.5 | 3292.4 | 2983.2 | 2786.4 | 2681.8 |
| 32.5°  | 3315.7 | 3137.7 | 2821.2 | 2589.2 | 2492.4 |
| 35°    | 3176.7 | 2979.5 | 2639.6 | 2396.1 | 2310.7 |
| 37.5°  | 3041.4 | 2828.6 | 2469.4 | 2202.5 | 2106.2 |
| 40°    | 2898.3 | 2666.7 | 2291.5 | 2017.2 | 1916.8 |
| 42.5°  | 2751.5 | 2504.3 | 2114.0 | 1827.8 | 1731.5 |
| 45°    | 2596.9 | 2337.9 | 1932.3 | 1657.7 | 1564.9 |
| 47.5°  | 2450.1 | 2175.9 | 1758.5 | 1483.8 | 1398.9 |
| 50°    | 2287.8 | 2013.5 | 1588.4 | 1321.5 | 1240.7 |
| 52.5°  | 2129.2 | 1839.3 | 1426.0 | 1171.0 | 1097.6 |
| 55°    | 1974.6 | 1673.3 | 1255.9 | 1024.2 | 950.8  |
| 57.5°  | 1816.3 | 1507.2 | 1105.3 | 888.9  | 827.0  |
| 60°    | 1654.0 | 1344.8 | 946.7  | 749.9  | 688.0  |
| 62.5°  | 1495.7 | 1186.5 | 811.4  | 626.1  | 595.3  |
| 65°    | 1333.3 | 1020.1 | 672.4  | 541.2  | 529.3  |
| 67.5°  | 1178.8 | 865.5  | 541.2  | 475.2  | 463.7  |
| 70°    | 1016.4 | 715.1  | 448.1  | 409.6  | 394.0  |
| 72.5°  | 861.9  | 575.7  | 374.7  | 344.0  | 336.2  |
| 75°    | 710.9  | 440.3  | 309.2  | 282.1  | 278.4  |
| 77.5°  | 560.5  | 312.8  | 243.6  | 228.0  | 220.2  |
| 80°    | 421.1  | 224.3  | 185.3  | 170.1  | 170.1  |
| 82.5°  | 293.6  | 150.8  | 127.5  | 119.7  | 119.7  |
| 85°    | 166.1  | 84.9   | 73.4   | 73.4   | 73.4   |
| 87.5°  | 61.9   | 30.7   | 30.7   | 27.0   | 27.0   |
| 90°    | 2.2    | 26.6   | 72.4   | 67.9   | 70.2   |
| 92.5°  | 45.8   | 62.1   | 64.3   | 66.5   | 66.5   |
| 95°    | 107.9  | 128.5  | 132.2  | 132.2  | 128.5  |
| 97.5°  | 179.5  | 198.7  | 206.9  | 206.9  | 206.9  |
| 100°   | 262.3  | 279.3  | 285.2  | 285.2  | 283.0  |
| 102.5° | 349.5  | 362.0  | 370.1  | 372.4  | 370.1  |
| 105°   | 444.8  | 450.6  | 455.1  | 458.8  | 458.8  |
| 107.5° | 539.3  | 548.2  | 548.2  | 549.7  | 539.3  |
| 110°   | 630.9  | 642.8  | 642.8  | 642.8  | 636.9  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 730.0  | 742.5  | 740.3  | 734.4  | 730.0  |
| 115°   | 827.5  | 839.3  | 835.6  | 833.4  | 827.5  |
| 117.5° | 924.3  | 940.6  | 930.2  | 924.3  | 918.3  |
| 120°   | 1021.8 | 1038.0 | 1021.8 | 1021.8 | 1015.1 |
| 122.5° | 1110.4 | 1131.2 | 1120.8 | 1114.9 | 1110.4 |
| 125°   | 1203.6 | 1222.0 | 1216.2 | 1209.4 | 1207.3 |
| 127.5° | 1294.4 | 1317.3 | 1309.2 | 1300.4 | 1294.4 |
| 130°   | 1379.4 | 1406.0 | 1402.3 | 1397.8 | 1389.7 |
| 132.5° | 1474.7 | 1495.4 | 1496.8 | 1486.5 | 1480.7 |
| 135°   | 1556.7 | 1579.6 | 1584.1 | 1581.8 | 1576.0 |
| 137.5° | 1648.3 | 1666.8 | 1670.5 | 1669.0 | 1660.2 |
| 140°   | 1728.9 | 1747.3 | 1757.6 | 1757.6 | 1749.5 |
| 142.5° | 1811.6 | 1830.1 | 1836.0 | 1838.2 | 1830.1 |
| 145°   | 1890.0 | 1904.7 | 1916.5 | 1918.7 | 1910.6 |
| 147.5° | 1960.1 | 1978.6 | 1987.4 | 1991.1 | 1983.1 |
| 150°   | 2032.6 | 2045.1 | 2053.2 | 2059.9 | 2053.2 |
| 152.5° | 2096.8 | 2109.4 | 2119.7 | 2127.9 | 2119.7 |
| 155°   | 2161.1 | 2167.0 | 2173.7 | 2184.0 | 2177.4 |
| 157.5° | 2216.5 | 2220.9 | 2224.6 | 2239.4 | 2229.0 |
| 160°   | 2266.0 | 2270.5 | 2272.7 | 2285.2 | 2276.3 |
| 162.5° | 2311.8 | 2311.8 | 2314.0 | 2328.1 | 2317.7 |
| 165°   | 2351.0 | 2348.7 | 2348.7 | 2363.5 | 2353.2 |
| 167.5° | 2386.4 | 2379.8 | 2379.8 | 2394.5 | 2384.2 |
| 170°   | 2413.0 | 2407.1 | 2404.9 | 2419.7 | 2407.1 |
| 172.5° | 2431.5 | 2425.6 | 2423.4 | 2438.2 | 2425.6 |
| 175°   | 2446.3 | 2440.3 | 2435.9 | 2450.7 | 2438.2 |
| 177.5° | 2454.4 | 2448.5 | 2444.0 | 2456.6 | 2444.0 |
| 180°   | 2450.7 | 2450.7 | 2450.7 | 2450.7 | 2450.7 |



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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 | 11.53            | 12.41 | 12.44 | 13.34 | 14.52 | 7.49           | 8.38  | 8.40  | 9.30  | 10.48 |
|                 | 3H   | 13.22            | 14.01 | 14.14 | 14.94 | 16.15 | 8.69           | 9.48  | 9.61  | 10.41 | 11.62 |
|                 | 4H   | 13.83            | 14.58 | 14.77 | 15.52 | 16.73 | 9.14           | 9.88  | 10.07 | 10.82 | 12.04 |
|                 | 6H   | 14.26            | 14.95 | 15.21 | 15.89 | 17.12 | 9.46           | 10.15 | 10.41 | 11.09 | 12.32 |
|                 | 8H   | 14.39            | 15.04 | 15.34 | 16.00 | 17.23 | 9.56           | 10.21 | 10.51 | 11.17 | 12.40 |
|                 | 12H  | 14.45            | 15.08 | 15.41 | 16.03 | 17.28 | 9.60           | 10.22 | 10.56 | 11.18 | 12.43 |
| 4H              | 2H   | 11.56            | 12.30 | 12.50 | 13.24 | 14.46 | 8.10           | 8.84  | 9.04  | 9.78  | 11.00 |
|                 | 3H   | 13.39            | 14.01 | 14.35 | 14.98 | 16.21 | 9.45           | 10.07 | 10.40 | 11.04 | 12.27 |
|                 | 4H   | 14.09            | 14.66 | 15.05 | 15.62 | 16.88 | 10.00          | 10.57 | 10.96 | 11.53 | 12.79 |
|                 | 6H   | 14.61            | 15.10 | 15.59 | 16.09 | 17.34 | 10.43          | 10.91 | 11.40 | 11.90 | 13.15 |
|                 | 8H   | 14.79            | 15.25 | 15.77 | 16.23 | 17.50 | 10.56          | 11.01 | 11.53 | 11.99 | 13.26 |
|                 | 12H  | 14.89            | 15.30 | 15.89 | 16.30 | 17.57 | 10.62          | 11.03 | 11.62 | 12.03 | 13.30 |
| 8H              | 4H   | 14.06            | 14.52 | 15.04 | 15.50 | 16.77 | 10.29          | 10.74 | 11.26 | 11.72 | 12.99 |
|                 | 6H   | 14.64            | 15.01 | 15.64 | 16.03 | 17.30 | 10.81          | 11.19 | 11.81 | 12.21 | 13.47 |
|                 | 8H   | 14.86            | 15.19 | 15.87 | 16.20 | 17.48 | 11.00          | 11.33 | 12.01 | 12.34 | 13.63 |
|                 | 12H  | 15.00            | 15.29 | 16.01 | 16.29 | 17.63 | 11.13          | 11.42 | 12.14 | 12.42 | 13.75 |
| 12H             | 4H   | 14.02            | 14.43 | 15.01 | 15.42 | 16.70 | 10.30          | 10.71 | 11.29 | 11.70 | 12.98 |
|                 | 6H   | 14.61            | 14.94 | 15.62 | 15.95 | 17.24 | 10.86          | 11.19 | 11.87 | 12.20 | 13.49 |
|                 | 8H   | 14.84            | 15.13 | 15.85 | 16.13 | 17.46 | 11.08          | 11.37 | 12.09 | 12.37 | 13.70 |