

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: P925131

Luminaire Tested: DFN2DIP-PN4F0-080D080US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925131  
REPORT IS A COMBINATION OF REPORTS P901210 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-080D080US950-RLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

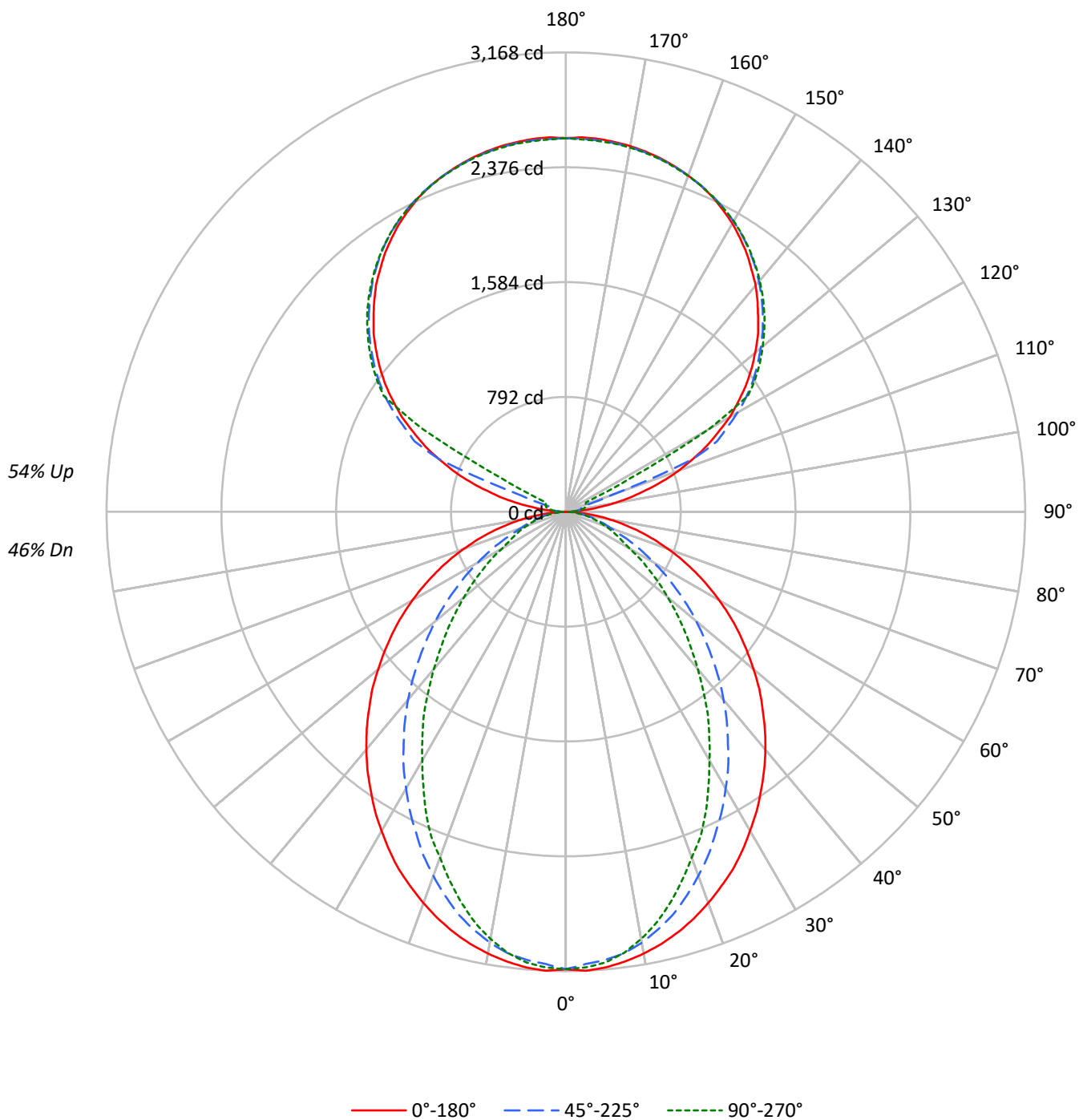
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14042.9 lumens  
Efficiency: N/A  
Efficacy: 103.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 135.1  
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 |
| RC  | 80  |     |     |     | 70 |    |    |    |    | 50 |    |    |    |    | 30 |    |    |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 | 46 |    |    |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 | 40 |    |    |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 | 34 |    |    |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 | 29 |    |    |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 | 26 |    |    |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 | 23 |    |    |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 | 20 |    |    |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 | 18 |    |    |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 | 16 |    |    |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 | 15 |    |    |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 | 13 |    |    |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2303 | 2303 | 2303 |
| 5°  | 2306 | 2266 | 2281 |
| 10° | 2283 | 2222 | 2207 |
| 15° | 2252 | 2149 | 2093 |
| 20° | 2210 | 2048 | 1952 |
| 25° | 2168 | 1935 | 1817 |
| 30° | 2111 | 1819 | 1644 |
| 35° | 2055 | 1694 | 1493 |
| 40° | 1998 | 1565 | 1320 |
| 45° | 1931 | 1421 | 1162 |
| 50° | 1863 | 1276 | 1009 |
| 55° | 1791 | 1122 | 861  |
| 60° | 1708 | 960  | 709  |
| 65° | 1613 | 795  | 639  |
| 70° | 1498 | 642  | 579  |
| 75° | 1353 | 566  | 528  |
| 80° | 1143 | 476  | 459  |
| 85° | 796  | 319  | 348  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1931 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 295.6   | 2.1       |
| 10°-20°   | 811.5   | 5.8       |
| 20°-30°   | 1139.4  | 8.1       |
| 30°-40°   | 1242.0  | 8.8       |
| 40°-50°   | 1141.5  | 8.1       |
| 50°-60°   | 896.5   | 6.4       |
| 60°-70°   | 583.5   | 4.2       |
| 70°-80°   | 300.4   | 2.1       |
| 80°-90°   | 81.2    | 0.6       |
| 90°-100°  | 84.9    | 0.6       |
| 100°-110° | 316.6   | 2.3       |
| 110°-120° | 839.7   | 6.0       |
| 120°-130° | 1392.7  | 9.9       |
| 130°-140° | 1479.4  | 10.5      |
| 140°-150° | 1374.9  | 9.8       |
| 150°-160° | 1105.4  | 7.9       |
| 160°-170° | 712.3   | 5.1       |
| 170°-180° | 245.2   | 1.7       |
| 0°-30°    | 2246.6  | 16.0      |
| 0°-40°    | 3488.6  | 24.8      |
| 0°-60°    | 5526.6  | 39.4      |
| 0°-90°    | 6491.7  | 46.2      |
| 90°-120°  | 1241.3  | 8.8       |
| 90°-150°  | 5488.3  | 39.1      |
| 90°-180°  | 7551.0  | 53.8      |
| 0°-180°   | 14042.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3154 | 3154  | 3154 | 3154  | 3154 |      |
| 5°   | 3154 | 3140  | 3103 | 3128  | 3120 | 299  |
| 15°  | 3000 | 2969  | 2872 | 2818  | 2789 | 845  |
| 25°  | 2723 | 2632  | 2444 | 2327  | 2284 | 1252 |
| 35°  | 2347 | 2201  | 1950 | 1770  | 1707 | 1469 |
| 45°  | 1918 | 1727  | 1427 | 1224  | 1156 | 1481 |
| 55°  | 1459 | 1236  | 928  | 756   | 702  | 1303 |
| 65°  | 985  | 754   | 497  | 400   | 391  | 976  |
| 75°  | 525  | 325   | 228  | 208   | 206  | 555  |
| 85°  | 123  | 63    | 54   | 54    | 54   | 141  |
| 90°  | 2    | 22    | 37   | 47    | 50   | 13   |
| 95°  | 121  | 60    | 73   | 82    | 80   | 143  |
| 105° | 567  | 623   | 114  | 134   | 142  | 605  |
| 115° | 1072 | 1103  | 1150 | 287   | 153  | 1055 |
| 125° | 1515 | 1540  | 1575 | 1588  | 1594 | 1351 |
| 135° | 1875 | 1905  | 1922 | 1940  | 1936 | 1448 |
| 145° | 2175 | 2173  | 2205 | 2218  | 2208 | 1360 |
| 155° | 2395 | 2378  | 2401 | 2412  | 2397 | 1104 |
| 165° | 2524 | 2512  | 2518 | 2531  | 2518 | 713  |
| 175° | 2581 | 2568  | 2572 | 2585  | 2566 | 246  |
| 180° | 2576 | 2576  | 2576 | 2576  | 2576 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3154.3 | 3154.3 | 3154.3 | 3154.3 | 3154.3 |
| 2.5°   | 3168.5 | 3154.3 | 3122.8 | 3151.5 | 3145.8 |
| 5°     | 3154.3 | 3140.1 | 3102.8 | 3128.5 | 3120.1 |
| 7.5°   | 3128.5 | 3111.6 | 3071.6 | 3082.9 | 3068.5 |
| 10°    | 3094.3 | 3074.4 | 3017.4 | 3008.6 | 2991.6 |
| 12.5°  | 3051.7 | 3025.9 | 2948.6 | 2931.6 | 2900.2 |
| 15°    | 3000.1 | 2968.7 | 2871.7 | 2817.5 | 2789.0 |
| 17.5°  | 2940.1 | 2894.4 | 2774.5 | 2711.8 | 2666.0 |
| 20°    | 2871.7 | 2814.5 | 2671.9 | 2600.7 | 2537.6 |
| 22.5°  | 2797.5 | 2731.8 | 2566.2 | 2469.2 | 2426.5 |
| 25°    | 2723.3 | 2631.9 | 2443.5 | 2326.6 | 2283.6 |
| 27.5°  | 2634.9 | 2537.6 | 2329.3 | 2195.2 | 2129.4 |
| 30°    | 2540.7 | 2431.9 | 2203.6 | 2058.3 | 1981.0 |
| 32.5°  | 2449.2 | 2317.8 | 2084.0 | 1912.6 | 1841.1 |
| 35°    | 2346.6 | 2200.9 | 1949.8 | 1770.0 | 1706.9 |
| 37.5°  | 2246.6 | 2089.5 | 1824.1 | 1627.0 | 1555.8 |
| 40°    | 2141.0 | 1969.8 | 1692.7 | 1490.1 | 1415.8 |
| 42.5°  | 2032.5 | 1849.9 | 1561.5 | 1350.2 | 1278.9 |
| 45°    | 1918.3 | 1726.9 | 1427.4 | 1224.5 | 1156.1 |
| 47.5°  | 1809.9 | 1607.3 | 1299.0 | 1096.1 | 1033.4 |
| 50°    | 1689.9 | 1487.4 | 1173.3 | 976.1  | 916.4  |
| 52.5°  | 1572.8 | 1358.6 | 1053.3 | 865.0  | 810.8  |
| 55°    | 1458.6 | 1236.0 | 927.7  | 756.5  | 702.3  |
| 57.5°  | 1341.7 | 1113.3 | 816.5  | 656.6  | 610.8  |
| 60°    | 1221.7 | 993.4  | 699.3  | 553.9  | 508.2  |
| 62.5°  | 1104.8 | 876.4  | 599.4  | 462.5  | 439.8  |
| 65°    | 984.9  | 753.5  | 496.7  | 399.8  | 390.9  |
| 67.5°  | 870.7  | 639.4  | 399.8  | 351.0  | 342.6  |
| 70°    | 750.8  | 528.2  | 331.0  | 302.5  | 291.1  |
| 72.5°  | 636.6  | 425.2  | 276.9  | 254.1  | 248.3  |
| 75°    | 525.2  | 325.3  | 228.4  | 208.4  | 205.7  |
| 77.5°  | 414.0  | 231.1  | 179.9  | 168.4  | 162.7  |
| 80°    | 311.0  | 165.7  | 136.9  | 125.6  | 125.6  |
| 82.5°  | 216.8  | 111.4  | 94.2   | 88.4   | 88.4   |
| 85°    | 122.7  | 62.7   | 54.2   | 54.2   | 54.2   |
| 87.5°  | 45.7   | 22.7   | 22.7   | 20.0   | 20.0   |
| 90°    | 1.8    | 22.3   | 37.2   | 46.7   | 50.3   |
| 92.5°  | 46.7   | 39.2   | 44.7   | 48.5   | 50.3   |
| 95°    | 121.1  | 59.5   | 72.6   | 82.1   | 80.1   |
| 97.5°  | 218.0  | 65.3   | 94.9   | 100.7  | 102.5  |
| 100°   | 330.0  | 74.6   | 106.3  | 121.1  | 124.8  |
| 102.5° | 452.9  | 449.2  | 110.0  | 130.3  | 136.1  |
| 105°   | 566.6  | 622.6  | 113.7  | 134.1  | 141.7  |
| 107.5° | 698.9  | 745.4  | 117.5  | 137.9  | 145.4  |
| 110°   | 825.8  | 864.7  | 326.3  | 139.9  | 147.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 945.0  | 978.4  | 946.8  | 143.4  | 149.2  |
| 115°   | 1071.6 | 1103.3 | 1150.0 | 287.1  | 152.9  |
| 117.5° | 1181.6 | 1218.8 | 1250.7 | 984.0  | 495.8  |
| 120°   | 1304.7 | 1332.5 | 1366.2 | 1388.5 | 1136.9 |
| 122.5° | 1408.9 | 1438.8 | 1476.2 | 1487.3 | 1489.3 |
| 125°   | 1515.1 | 1539.5 | 1574.9 | 1587.9 | 1593.5 |
| 127.5° | 1612.1 | 1638.2 | 1666.4 | 1684.9 | 1686.7 |
| 130°   | 1703.5 | 1733.3 | 1753.7 | 1774.3 | 1772.5 |
| 132.5° | 1796.7 | 1821.0 | 1841.4 | 1858.2 | 1856.4 |
| 135°   | 1875.0 | 1904.9 | 1921.5 | 1940.3 | 1936.5 |
| 137.5° | 1956.9 | 1979.3 | 1998.1 | 2016.7 | 2011.1 |
| 140°   | 2037.0 | 2052.1 | 2072.5 | 2089.3 | 2079.9 |
| 142.5° | 2104.3 | 2117.3 | 2141.4 | 2156.3 | 2147.0 |
| 145°   | 2175.1 | 2173.1 | 2204.8 | 2217.9 | 2208.5 |
| 147.5° | 2236.5 | 2230.9 | 2262.5 | 2271.9 | 2264.5 |
| 150°   | 2296.2 | 2283.1 | 2313.0 | 2324.0 | 2314.8 |
| 152.5° | 2346.5 | 2331.6 | 2359.4 | 2370.8 | 2357.7 |
| 155°   | 2394.9 | 2378.3 | 2400.6 | 2411.7 | 2396.9 |
| 157.5° | 2434.0 | 2419.2 | 2436.0 | 2449.1 | 2434.0 |
| 160°   | 2467.7 | 2456.5 | 2467.7 | 2478.8 | 2465.7 |
| 162.5° | 2497.4 | 2486.3 | 2495.6 | 2508.6 | 2491.8 |
| 165°   | 2523.5 | 2512.5 | 2518.0 | 2531.0 | 2518.0 |
| 167.5° | 2544.0 | 2532.8 | 2538.5 | 2551.6 | 2534.8 |
| 170°   | 2560.9 | 2549.6 | 2553.4 | 2566.5 | 2549.6 |
| 172.5° | 2572.0 | 2560.9 | 2564.6 | 2577.7 | 2560.9 |
| 175°   | 2581.2 | 2568.2 | 2572.0 | 2585.0 | 2566.5 |
| 177.5° | 2585.0 | 2572.0 | 2573.9 | 2587.0 | 2570.2 |
| 180°   | 2575.7 | 2575.7 | 2575.7 | 2575.7 | 2575.7 |

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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 | 9.69             | 10.49 | 10.68 | 11.49 | 12.82 | 5.65           | 6.45 | 6.65  | 7.46  | 8.78  |
|                 | 3H   | 11.37            | 12.08 | 12.37 | 13.09 | 14.44 | 6.84           | 7.56 | 7.85  | 8.57  | 9.92  |
|                 | 4H   | 11.98            | 12.65 | 12.99 | 13.67 | 15.02 | 7.29           | 7.97 | 8.31  | 8.98  | 10.34 |
|                 | 6H   | 12.40            | 13.02 | 13.43 | 14.04 | 15.41 | 7.61           | 8.23 | 8.64  | 9.25  | 10.62 |
|                 | 8H   | 12.53            | 13.12 | 13.56 | 14.15 | 15.52 | 7.70           | 8.29 | 8.73  | 9.33  | 10.69 |
|                 | 12H  | 12.59            | 13.15 | 13.63 | 14.18 | 15.57 | 7.74           | 8.31 | 8.78  | 9.34  | 10.72 |
| 4H              | 2H   | 9.70             | 10.38 | 10.73 | 11.39 | 12.75 | 6.25           | 6.92 | 7.27  | 7.94  | 9.29  |
|                 | 3H   | 11.53            | 12.10 | 12.57 | 13.14 | 14.51 | 7.60           | 8.16 | 8.63  | 9.20  | 10.57 |
|                 | 4H   | 12.23            | 12.74 | 13.27 | 13.78 | 15.17 | 8.14           | 8.66 | 9.18  | 9.69  | 11.08 |
|                 | 6H   | 12.74            | 13.18 | 13.79 | 14.24 | 15.63 | 8.56           | 9.00 | 9.61  | 10.06 | 11.45 |
|                 | 8H   | 12.92            | 13.33 | 13.97 | 14.38 | 15.78 | 8.69           | 9.10 | 9.74  | 10.15 | 11.56 |
|                 | 12H  | 13.01            | 13.39 | 14.08 | 14.45 | 15.86 | 8.75           | 9.13 | 9.82  | 10.19 | 11.60 |
| 8H              | 4H   | 12.19            | 12.60 | 13.24 | 13.66 | 15.06 | 8.42           | 8.84 | 9.47  | 9.89  | 11.29 |
|                 | 6H   | 12.76            | 13.10 | 13.83 | 14.19 | 15.59 | 8.94           | 9.28 | 10.02 | 10.37 | 11.77 |
|                 | 8H   | 12.98            | 13.28 | 14.06 | 14.35 | 15.77 | 9.13           | 9.43 | 10.21 | 10.51 | 11.93 |
|                 | 12H  | 13.12            | 13.38 | 14.20 | 14.45 | 15.91 | 9.25           | 9.51 | 10.34 | 10.59 | 12.05 |
| 12H             | 4H   | 12.14            | 12.51 | 13.21 | 13.58 | 14.99 | 8.43           | 8.80 | 9.50  | 9.86  | 11.27 |
|                 | 6H   | 12.74            | 13.03 | 13.82 | 14.11 | 15.53 | 8.99           | 9.29 | 10.07 | 10.37 | 11.79 |
|                 | 8H   | 12.96            | 13.22 | 14.04 | 14.29 | 15.75 | 9.20           | 9.46 | 10.29 | 10.54 | 12.00 |