

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: P925202

Luminaire Tested: DFN2DIP-PN4F0-100D080US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925202  
REPORT IS A COMBINATION OF REPORTS P899694 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D080US950-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

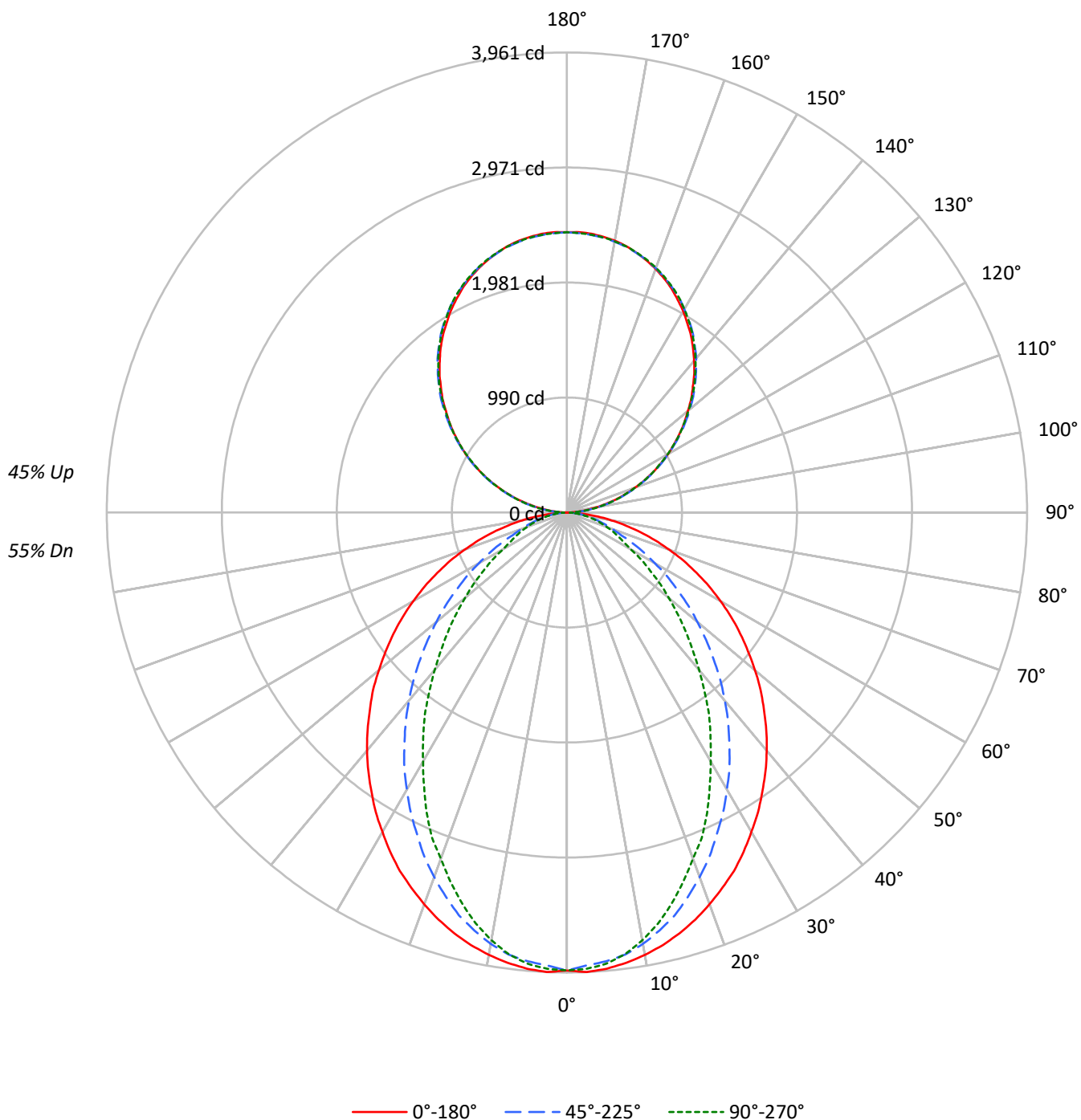
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14863.3 lumens  
Efficiency: N/A  
Efficacy: 93.5 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): 158.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 54 | 53 | 52 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 67 | 63 | 60 | 57 | 55 | 52 | 48 | 46 | 45 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 51 | 48 | 45 | 43 | 41 | 39 |
| 4   | 76  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 48 | 44 | 46 | 42 | 39 | 39 | 36 | 34 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 38 | 42 | 37 | 34 | 35 | 32 | 30 |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 26 | 24 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 32 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 28  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2878 | 2878 | 2878 |
| 5°  | 2883 | 2833 | 2851 |
| 10° | 2854 | 2778 | 2759 |
| 15° | 2815 | 2686 | 2616 |
| 20° | 2763 | 2560 | 2440 |
| 25° | 2710 | 2418 | 2271 |
| 30° | 2638 | 2273 | 2056 |
| 35° | 2568 | 2117 | 1866 |
| 40° | 2497 | 1956 | 1650 |
| 45° | 2414 | 1777 | 1453 |
| 50° | 2328 | 1595 | 1261 |
| 55° | 2239 | 1402 | 1076 |
| 60° | 2136 | 1200 | 886  |
| 65° | 2017 | 994  | 798  |
| 70° | 1872 | 802  | 724  |
| 75° | 1691 | 708  | 659  |
| 80° | 1429 | 595  | 574  |
| 85° | 995  | 399  | 434  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2414 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 369.5   | 2.5       |
| 10°-20°   | 1014.4  | 6.8       |
| 20°-30°   | 1424.2  | 9.6       |
| 30°-40°   | 1552.5  | 10.4      |
| 40°-50°   | 1426.9  | 9.6       |
| 50°-60°   | 1120.6  | 7.5       |
| 60°-70°   | 729.4   | 4.9       |
| 70°-80°   | 375.5   | 2.5       |
| 80°-90°   | 102.7   | 0.7       |
| 90°-100°  | 149.4   | 1.0       |
| 100°-110° | 474.6   | 3.2       |
| 110°-120° | 812.1   | 5.5       |
| 120°-130° | 1068.1  | 7.2       |
| 130°-140° | 1198.9  | 8.1       |
| 140°-150° | 1175.6  | 7.9       |
| 150°-160° | 986.2   | 6.6       |
| 160°-170° | 654.0   | 4.4       |
| 170°-180° | 228.6   | 1.5       |
| 0°-30°    | 2808.2  | 18.9      |
| 0°-40°    | 4360.7  | 29.3      |
| 0°-60°    | 6908.2  | 46.5      |
| 0°-90°    | 8115.8  | 54.6      |
| 90°-120°  | 1436.1  | 9.7       |
| 90°-150°  | 4878.6  | 32.8      |
| 90°-180°  | 6747.0  | 45.4      |
| 0°-180°   | 14863.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3943 | 3943  | 3943 | 3943  | 3943 |      |
| 5°   | 3943 | 3925  | 3878 | 3911  | 3900 | 374  |
| 15°  | 3750 | 3711  | 3590 | 3522  | 3486 | 1057 |
| 25°  | 3404 | 3290  | 3054 | 2908  | 2854 | 1566 |
| 35°  | 2933 | 2751  | 2437 | 2212  | 2134 | 1836 |
| 45°  | 2398 | 2159  | 1784 | 1531  | 1445 | 1852 |
| 55°  | 1823 | 1545  | 1160 | 946   | 878  | 1629 |
| 65°  | 1231 | 942   | 621  | 500   | 489  | 1221 |
| 75°  | 656  | 407   | 285  | 260   | 257  | 694  |
| 85°  | 153  | 78    | 68   | 68    | 68   | 176  |
| 90°  | 2    | 26    | 71   | 67    | 69   | 15   |
| 95°  | 106  | 127   | 130  | 130   | 127  | 118  |
| 105° | 438  | 444   | 448  | 452   | 452  | 462  |
| 115° | 815  | 827   | 823  | 821   | 815  | 806  |
| 125° | 1185 | 1204  | 1198 | 1191  | 1189 | 1059 |
| 135° | 1533 | 1556  | 1560 | 1558  | 1552 | 1185 |
| 145° | 1861 | 1876  | 1888 | 1890  | 1882 | 1163 |
| 155° | 2128 | 2134  | 2141 | 2151  | 2144 | 980  |
| 165° | 2316 | 2313  | 2313 | 2328  | 2318 | 653  |
| 175° | 2409 | 2404  | 2399 | 2414  | 2401 | 229  |
| 180° | 2414 | 2414  | 2414 | 2414  | 2414 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3942.9 | 3942.9 | 3942.9 | 3942.9 | 3942.9 |
| 2.5°   | 3960.6 | 3942.9 | 3903.5 | 3939.4 | 3932.3 |
| 5°     | 3942.9 | 3925.0 | 3878.5 | 3910.7 | 3900.0 |
| 7.5°   | 3910.7 | 3889.5 | 3839.5 | 3853.5 | 3835.7 |
| 10°    | 3867.9 | 3842.9 | 3771.7 | 3760.8 | 3739.6 |
| 12.5°  | 3814.6 | 3782.3 | 3685.8 | 3664.6 | 3625.2 |
| 15°    | 3750.2 | 3710.8 | 3589.6 | 3521.9 | 3486.3 |
| 17.5°  | 3675.2 | 3618.0 | 3468.2 | 3389.8 | 3332.6 |
| 20°    | 3589.6 | 3518.1 | 3339.8 | 3250.9 | 3172.0 |
| 22.5°  | 3496.9 | 3414.7 | 3207.6 | 3086.6 | 3033.1 |
| 25°    | 3404.2 | 3289.9 | 3054.3 | 2908.2 | 2854.5 |
| 27.5°  | 3293.6 | 3172.0 | 2911.6 | 2743.9 | 2661.8 |
| 30°    | 3175.9 | 3039.9 | 2754.5 | 2572.8 | 2476.3 |
| 32.5°  | 3061.6 | 2897.2 | 2605.0 | 2390.7 | 2301.3 |
| 35°    | 2933.2 | 2751.1 | 2437.3 | 2212.4 | 2133.6 |
| 37.5°  | 2808.3 | 2611.8 | 2280.2 | 2033.7 | 1944.7 |
| 40°    | 2676.2 | 2462.3 | 2115.9 | 1862.6 | 1769.9 |
| 42.5°  | 2540.6 | 2312.3 | 1952.0 | 1687.7 | 1598.7 |
| 45°    | 2397.9 | 2158.6 | 1784.3 | 1530.6 | 1445.0 |
| 47.5°  | 2262.4 | 2009.1 | 1623.7 | 1370.0 | 1291.7 |
| 50°    | 2112.4 | 1859.2 | 1466.6 | 1220.2 | 1145.6 |
| 52.5°  | 1965.9 | 1698.3 | 1316.7 | 1081.2 | 1013.4 |
| 55°    | 1823.2 | 1545.0 | 1159.6 | 945.7  | 877.9  |
| 57.5°  | 1677.1 | 1391.6 | 1020.7 | 820.7  | 763.6  |
| 60°    | 1527.2 | 1241.7 | 874.2  | 692.4  | 635.3  |
| 62.5°  | 1381.0 | 1095.6 | 749.2  | 578.1  | 549.7  |
| 65°    | 1231.1 | 941.9  | 620.9  | 499.7  | 488.7  |
| 67.5°  | 1088.4 | 799.2  | 499.7  | 438.7  | 428.2  |
| 70°    | 938.4  | 660.3  | 413.7  | 378.2  | 363.9  |
| 72.5°  | 795.7  | 531.5  | 346.0  | 317.6  | 310.4  |
| 75°    | 656.4  | 406.6  | 285.4  | 260.4  | 257.0  |
| 77.5°  | 517.5  | 288.9  | 224.9  | 210.5  | 203.3  |
| 80°    | 388.8  | 207.1  | 171.1  | 157.1  | 157.1  |
| 82.5°  | 271.0  | 139.3  | 117.7  | 110.6  | 110.6  |
| 85°    | 153.3  | 78.3   | 67.7   | 67.7   | 67.7   |
| 87.5°  | 57.1   | 28.4   | 28.4   | 25.0   | 25.0   |
| 90°    | 2.2    | 26.2   | 71.4   | 67.0   | 69.2   |
| 92.5°  | 45.1   | 61.2   | 63.3   | 65.4   | 65.4   |
| 95°    | 106.3  | 126.6  | 130.2  | 130.2  | 126.6  |
| 97.5°  | 176.9  | 195.8  | 203.8  | 203.8  | 203.8  |
| 100°   | 258.3  | 275.0  | 280.9  | 280.9  | 278.7  |
| 102.5° | 344.2  | 356.6  | 364.5  | 366.7  | 364.5  |
| 105°   | 438.1  | 443.9  | 448.3  | 451.9  | 451.9  |
| 107.5° | 531.2  | 540.0  | 540.0  | 541.4  | 531.2  |
| 110°   | 621.4  | 633.1  | 633.1  | 633.1  | 627.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 718.9  | 731.3  | 729.1  | 723.3  | 718.9  |
| 115°   | 815.0  | 826.6  | 823.0  | 820.8  | 815.0  |
| 117.5° | 910.3  | 926.3  | 916.1  | 910.3  | 904.5  |
| 120°   | 1006.4 | 1022.4 | 1006.4 | 1006.4 | 999.8  |
| 122.5° | 1093.7 | 1114.1 | 1103.9 | 1098.1 | 1093.7 |
| 125°   | 1185.3 | 1203.6 | 1197.7 | 1191.2 | 1189.1 |
| 127.5° | 1274.9 | 1297.4 | 1289.4 | 1280.7 | 1274.9 |
| 130°   | 1358.6 | 1384.7 | 1381.1 | 1376.8 | 1368.8 |
| 132.5° | 1452.5 | 1472.8 | 1474.3 | 1464.1 | 1458.3 |
| 135°   | 1533.2 | 1555.8 | 1560.2 | 1558.0 | 1552.2 |
| 137.5° | 1623.4 | 1641.6 | 1645.3 | 1643.8 | 1635.1 |
| 140°   | 1702.8 | 1720.9 | 1731.1 | 1731.1 | 1723.1 |
| 142.5° | 1784.3 | 1802.5 | 1808.3 | 1810.5 | 1802.5 |
| 145°   | 1861.4 | 1875.9 | 1887.6 | 1889.8 | 1881.8 |
| 147.5° | 1930.5 | 1948.7 | 1957.4 | 1961.1 | 1953.1 |
| 150°   | 2001.9 | 2014.2 | 2022.2 | 2028.8 | 2022.2 |
| 152.5° | 2065.1 | 2077.5 | 2087.7 | 2095.7 | 2087.7 |
| 155°   | 2128.5 | 2134.3 | 2140.9 | 2151.0 | 2144.5 |
| 157.5° | 2183.0 | 2187.4 | 2191.1 | 2205.6 | 2195.4 |
| 160°   | 2231.8 | 2236.2 | 2238.4 | 2250.7 | 2242.0 |
| 162.5° | 2276.9 | 2276.9 | 2279.1 | 2292.9 | 2282.7 |
| 165°   | 2315.5 | 2313.3 | 2313.3 | 2327.9 | 2317.6 |
| 167.5° | 2350.4 | 2343.9 | 2343.9 | 2358.4 | 2348.2 |
| 170°   | 2376.6 | 2370.8 | 2368.6 | 2383.2 | 2370.8 |
| 172.5° | 2394.8 | 2389.0 | 2386.8 | 2401.3 | 2389.0 |
| 175°   | 2409.3 | 2403.5 | 2399.1 | 2413.7 | 2401.3 |
| 177.5° | 2417.3 | 2411.5 | 2407.1 | 2419.5 | 2407.1 |
| 180°   | 2413.7 | 2413.7 | 2413.7 | 2413.7 | 2413.7 |

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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 | 11.25            | 12.11 | 12.17 | 13.05 | 14.26 | 7.21           | 8.08  | 8.13  | 9.02  | 10.22 |
|                 | 3H   | 12.93            | 13.71 | 13.86 | 14.65 | 15.88 | 8.40           | 9.18  | 9.34  | 10.13 | 11.36 |
|                 | 4H   | 13.54            | 14.28 | 14.49 | 15.23 | 16.47 | 8.86           | 9.59  | 9.81  | 10.54 | 11.78 |
|                 | 6H   | 13.97            | 14.64 | 14.93 | 15.60 | 16.85 | 9.18           | 9.86  | 10.14 | 10.81 | 12.06 |
|                 | 8H   | 14.10            | 14.74 | 15.06 | 15.71 | 16.96 | 9.27           | 9.91  | 10.24 | 10.89 | 12.14 |
|                 | 12H  | 14.16            | 14.77 | 15.13 | 15.74 | 17.01 | 9.32           | 9.93  | 10.29 | 10.89 | 12.17 |
| 4H              | 2H   | 11.27            | 12.00 | 12.22 | 12.95 | 14.19 | 7.81           | 8.55  | 8.77  | 9.50  | 10.74 |
|                 | 3H   | 13.10            | 13.71 | 14.07 | 14.70 | 15.95 | 9.17           | 9.78  | 10.13 | 10.76 | 12.01 |
|                 | 4H   | 13.80            | 14.36 | 14.77 | 15.33 | 16.61 | 9.72           | 10.27 | 10.69 | 11.25 | 12.53 |
|                 | 6H   | 14.32            | 14.80 | 15.31 | 15.80 | 17.08 | 10.14          | 10.62 | 11.13 | 11.62 | 12.89 |
|                 | 8H   | 14.50            | 14.95 | 15.49 | 15.94 | 17.23 | 10.27          | 10.72 | 11.26 | 11.71 | 13.00 |
|                 | 12H  | 14.60            | 15.00 | 15.60 | 16.01 | 17.30 | 10.34          | 10.74 | 11.34 | 11.75 | 13.04 |
| 8H              | 4H   | 13.77            | 14.22 | 14.76 | 15.21 | 16.50 | 10.00          | 10.45 | 10.99 | 11.44 | 12.73 |
|                 | 6H   | 14.34            | 14.71 | 15.35 | 15.74 | 17.03 | 10.52          | 10.89 | 11.54 | 11.93 | 13.21 |
|                 | 8H   | 14.56            | 14.89 | 15.58 | 15.91 | 17.21 | 10.72          | 11.04 | 11.74 | 12.06 | 13.37 |
|                 | 12H  | 14.70            | 14.99 | 15.73 | 16.00 | 17.36 | 10.84          | 11.12 | 11.86 | 12.14 | 13.49 |
| 12H             | 4H   | 13.72            | 14.13 | 14.73 | 15.14 | 16.43 | 10.01          | 10.41 | 11.02 | 11.42 | 12.72 |
|                 | 6H   | 14.32            | 14.64 | 15.34 | 15.66 | 16.97 | 10.57          | 10.90 | 11.59 | 11.92 | 13.23 |
|                 | 8H   | 14.54            | 14.83 | 15.57 | 15.84 | 17.20 | 10.79          | 11.07 | 11.81 | 12.09 | 13.44 |