

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: P903110

Luminaire Tested: DFN2DIP-PN3F0-080D080US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903110  
REPORT IS A COMBINATION OF REPORTS P899592 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-080D080US830-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

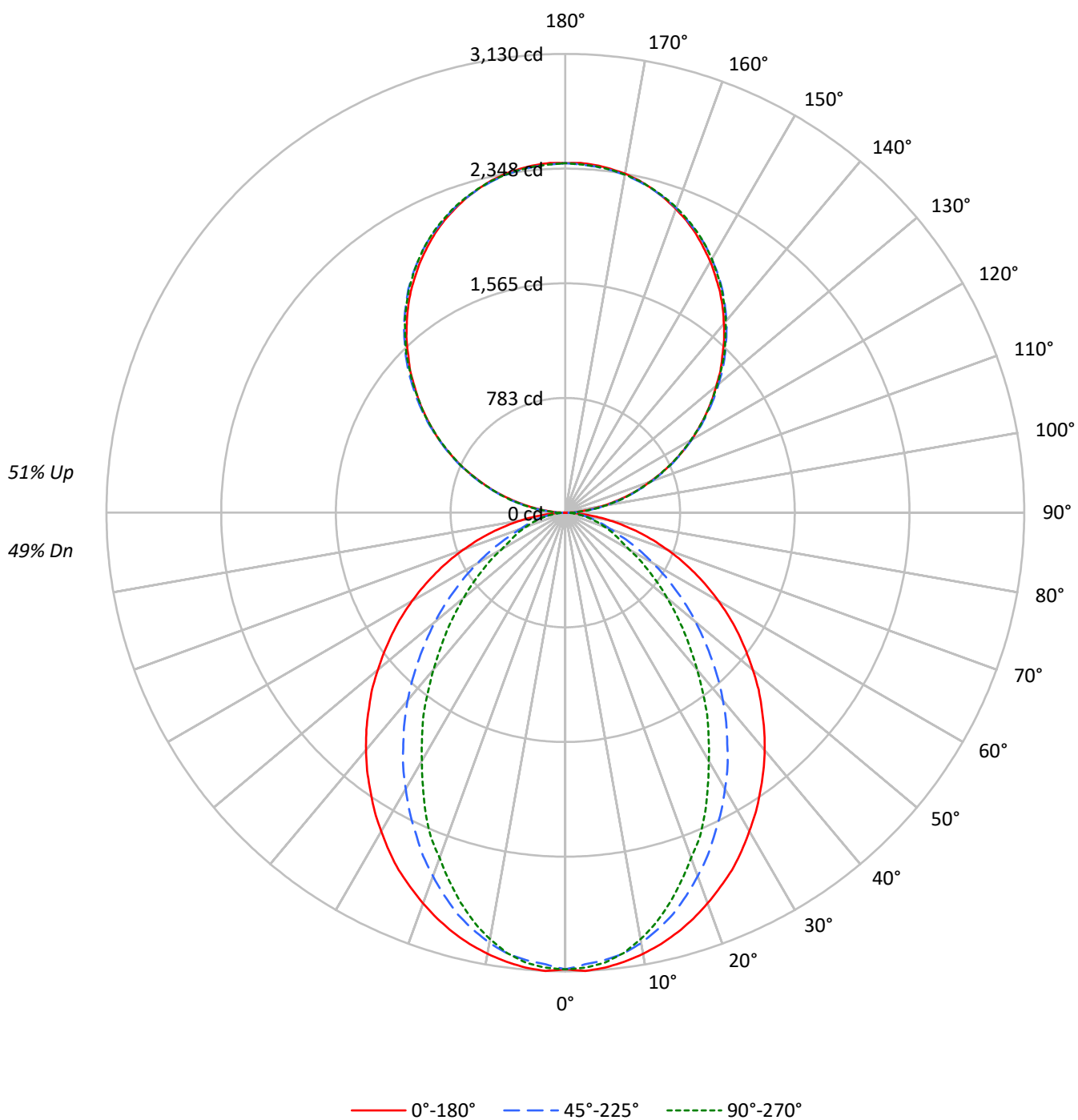
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13082.5 lumens  
Efficiency: N/A  
Efficacy: 92.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 141.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLLFLL

**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3643 | 3643 | 3643 |
| 5°  | 3647 | 3583 | 3607 |
| 10° | 3608 | 3510 | 3488 |
| 15° | 3557 | 3391 | 3305 |
| 20° | 3489 | 3229 | 3081 |
| 25° | 3419 | 3048 | 2865 |
| 30° | 3327 | 2862 | 2591 |
| 35° | 3236 | 2662 | 2351 |
| 40° | 3143 | 2456 | 2076 |
| 45° | 3036 | 2227 | 1827 |
| 50° | 2924 | 1997 | 1583 |
| 55° | 2808 | 1751 | 1349 |
| 60° | 2673 | 1495 | 1109 |
| 65° | 2518 | 1234 | 996  |
| 70° | 2330 | 991  | 899  |
| 75° | 2093 | 868  | 815  |
| 80° | 1750 | 720  | 701  |
| 85° | 1189 | 468  | 518  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3036 cd/sqm

TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 292.1   | 2.2       |
| 10°-20°   | 801.8   | 6.1       |
| 20°-30°   | 1125.7  | 8.6       |
| 30°-40°   | 1227.1  | 9.4       |
| 40°-50°   | 1127.8  | 8.6       |
| 50°-60°   | 885.7   | 6.8       |
| 60°-70°   | 576.5   | 4.4       |
| 70°-80°   | 296.8   | 2.3       |
| 80°-90°   | 82.5    | 0.6       |
| 90°-100°  | 147.6   | 1.1       |
| 100°-110° | 468.9   | 3.6       |
| 110°-120° | 802.4   | 6.1       |
| 120°-130° | 1055.3  | 8.1       |
| 130°-140° | 1184.5  | 9.1       |
| 140°-150° | 1161.5  | 8.9       |
| 150°-160° | 974.4   | 7.4       |
| 160°-170° | 646.2   | 4.9       |
| 170°-180° | 225.9   | 1.7       |
| 0°-30°    | 2219.6  | 17.0      |
| 0°-40°    | 3446.7  | 26.3      |
| 0°-60°    | 5460.2  | 41.7      |
| 0°-90°    | 6416.1  | 49.0      |
| 90°-120°  | 1418.8  | 10.8      |
| 90°-150°  | 4820.1  | 36.8      |
| 90°-180°  | 6666.0  | 51.0      |
| 0°-180°   | 13082.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3116 | 3116  | 3116 | 3116  | 3116 |      |
| 5°   | 3116 | 3102  | 3066 | 3091  | 3083 | 296  |
| 15°  | 2964 | 2933  | 2837 | 2784  | 2756 | 835  |
| 25°  | 2691 | 2600  | 2414 | 2299  | 2256 | 1237 |
| 35°  | 2318 | 2174  | 1926 | 1749  | 1686 | 1451 |
| 45°  | 1895 | 1706  | 1410 | 1210  | 1142 | 1464 |
| 55°  | 1441 | 1221  | 916  | 747   | 694  | 1288 |
| 65°  | 973  | 744   | 491  | 395   | 386  | 965  |
| 75°  | 519  | 321   | 226  | 206   | 203  | 549  |
| 85°  | 121  | 62    | 54   | 54    | 54   | 139  |
| 90°  | 2    | 26    | 70   | 66    | 68   | 13   |
| 95°  | 105  | 125   | 129  | 129   | 125  | 117  |
| 105° | 433  | 439   | 443  | 446   | 446  | 457  |
| 115° | 805  | 817   | 813  | 811   | 805  | 796  |
| 125° | 1171 | 1189  | 1183 | 1177  | 1175 | 1047 |
| 135° | 1515 | 1537  | 1541 | 1539  | 1534 | 1171 |
| 145° | 1839 | 1853  | 1865 | 1867  | 1859 | 1149 |
| 155° | 2103 | 2109  | 2115 | 2125  | 2119 | 968  |
| 165° | 2288 | 2286  | 2286 | 2300  | 2290 | 645  |
| 175° | 2380 | 2375  | 2370 | 2385  | 2372 | 226  |
| 180° | 2385 | 2385  | 2385 | 2385  | 2385 |      |

TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3116.4 | 3116.4 | 3116.4 | 3116.4 | 3116.4 |
| 2.5°   | 3130.5 | 3116.4 | 3085.3 | 3113.7 | 3108.0 |
| 5°     | 3116.4 | 3102.4 | 3065.5 | 3091.0 | 3082.6 |
| 7.5°   | 3091.0 | 3074.2 | 3034.7 | 3045.8 | 3031.7 |
| 10°    | 3057.1 | 3037.4 | 2981.2 | 2972.5 | 2955.7 |
| 12.5°  | 3015.0 | 2989.6 | 2913.2 | 2896.4 | 2865.3 |
| 15°    | 2964.1 | 2933.0 | 2837.2 | 2783.7 | 2755.5 |
| 17.5°  | 2904.8 | 2859.7 | 2741.2 | 2679.3 | 2634.0 |
| 20°    | 2837.2 | 2780.7 | 2639.8 | 2569.5 | 2507.2 |
| 22.5°  | 2763.9 | 2699.0 | 2535.3 | 2439.6 | 2397.4 |
| 25°    | 2690.6 | 2600.3 | 2414.1 | 2298.7 | 2256.2 |
| 27.5°  | 2603.2 | 2507.2 | 2301.3 | 2168.8 | 2103.8 |
| 30°    | 2510.2 | 2402.7 | 2177.2 | 2033.5 | 1957.2 |
| 32.5°  | 2419.8 | 2290.0 | 2059.0 | 1889.6 | 1819.0 |
| 35°    | 2318.4 | 2174.4 | 1926.4 | 1748.7 | 1686.4 |
| 37.5°  | 2219.6 | 2064.4 | 1802.2 | 1607.4 | 1537.1 |
| 40°    | 2115.3 | 1946.2 | 1672.4 | 1472.2 | 1398.8 |
| 42.5°  | 2008.1 | 1827.7 | 1542.8 | 1334.0 | 1263.6 |
| 45°    | 1895.3 | 1706.2 | 1410.2 | 1209.8 | 1142.2 |
| 47.5°  | 1788.2 | 1588.0 | 1283.4 | 1082.9 | 1021.0 |
| 50°    | 1669.6 | 1469.5 | 1159.2 | 964.4  | 905.4  |
| 52.5°  | 1553.9 | 1342.3 | 1040.7 | 854.6  | 801.1  |
| 55°    | 1441.1 | 1221.2 | 916.5  | 747.4  | 693.9  |
| 57.5°  | 1325.6 | 1099.9 | 806.7  | 648.8  | 603.5  |
| 60°    | 1207.0 | 981.5  | 690.9  | 547.2  | 502.1  |
| 62.5°  | 1091.6 | 865.9  | 592.2  | 456.9  | 434.5  |
| 65°    | 973.1  | 744.4  | 490.7  | 395.0  | 386.3  |
| 67.5°  | 860.3  | 631.7  | 395.0  | 346.8  | 338.5  |
| 70°    | 741.8  | 521.9  | 327.1  | 298.9  | 287.6  |
| 72.5°  | 629.0  | 420.1  | 273.5  | 251.1  | 245.3  |
| 75°    | 518.9  | 321.4  | 225.6  | 205.9  | 203.2  |
| 77.5°  | 409.1  | 228.3  | 177.8  | 166.4  | 160.7  |
| 80°    | 307.3  | 163.7  | 135.3  | 124.1  | 124.1  |
| 82.5°  | 214.2  | 110.1  | 93.0   | 87.4   | 87.4   |
| 85°    | 121.2  | 61.9   | 53.5   | 53.5   | 53.5   |
| 87.5°  | 45.1   | 22.4   | 22.4   | 19.8   | 19.8   |
| 90°    | 2.2    | 25.9   | 70.5   | 66.2   | 68.3   |
| 92.5°  | 44.6   | 60.4   | 62.6   | 64.7   | 64.7   |
| 95°    | 105.0  | 125.1  | 128.7  | 128.7  | 125.1  |
| 97.5°  | 174.7  | 193.4  | 201.3  | 201.3  | 201.3  |
| 100°   | 255.2  | 271.7  | 277.5  | 277.5  | 275.3  |
| 102.5° | 340.1  | 352.3  | 360.1  | 362.3  | 360.1  |
| 105°   | 432.8  | 438.6  | 442.9  | 446.5  | 446.5  |
| 107.5° | 524.8  | 533.5  | 533.5  | 534.9  | 524.8  |
| 110°   | 614.0  | 625.5  | 625.5  | 625.5  | 619.7  |

TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 710.3  | 722.6  | 720.4  | 714.6  | 710.3  |
| 115°   | 805.2  | 816.7  | 813.1  | 811.0  | 805.2  |
| 117.5° | 899.4  | 915.2  | 905.1  | 899.4  | 893.6  |
| 120°   | 994.3  | 1010.1 | 994.3  | 994.3  | 987.8  |
| 122.5° | 1080.5 | 1100.7 | 1090.6 | 1084.9 | 1080.5 |
| 125°   | 1171.1 | 1189.1 | 1183.4 | 1176.9 | 1174.8 |
| 127.5° | 1259.6 | 1281.9 | 1273.9 | 1265.4 | 1259.6 |
| 130°   | 1342.3 | 1368.1 | 1364.5 | 1360.3 | 1352.4 |
| 132.5° | 1435.0 | 1455.1 | 1456.6 | 1446.5 | 1440.8 |
| 135°   | 1514.8 | 1537.1 | 1541.4 | 1539.3 | 1533.5 |
| 137.5° | 1603.9 | 1621.9 | 1625.5 | 1624.1 | 1615.4 |
| 140°   | 1682.3 | 1700.3 | 1710.3 | 1710.3 | 1702.4 |
| 142.5° | 1762.8 | 1780.8 | 1786.6 | 1788.8 | 1780.8 |
| 145°   | 1839.1 | 1853.4 | 1864.9 | 1867.1 | 1859.2 |
| 147.5° | 1907.3 | 1925.3 | 1933.9 | 1937.6 | 1929.7 |
| 150°   | 1977.8 | 1990.0 | 1997.9 | 2004.4 | 1997.9 |
| 152.5° | 2040.3 | 2052.6 | 2062.7 | 2070.6 | 2062.7 |
| 155°   | 2102.9 | 2108.7 | 2115.2 | 2125.2 | 2118.7 |
| 157.5° | 2156.8 | 2161.2 | 2164.7 | 2179.1 | 2169.1 |
| 160°   | 2205.0 | 2209.3 | 2211.5 | 2223.6 | 2215.1 |
| 162.5° | 2249.6 | 2249.6 | 2251.7 | 2265.4 | 2255.3 |
| 165°   | 2287.6 | 2285.5 | 2285.5 | 2299.9 | 2289.8 |
| 167.5° | 2322.1 | 2315.7 | 2315.7 | 2330.1 | 2320.0 |
| 170°   | 2348.1 | 2342.3 | 2340.1 | 2354.6 | 2342.3 |
| 172.5° | 2366.1 | 2360.3 | 2358.1 | 2372.5 | 2360.3 |
| 175°   | 2380.4 | 2374.6 | 2370.3 | 2384.7 | 2372.5 |
| 177.5° | 2388.3 | 2382.6 | 2378.2 | 2390.5 | 2378.2 |
| 180°   | 2384.7 | 2384.7 | 2384.7 | 2384.7 | 2384.7 |

TEST NUMBER: P903110

CATALOG NUMBER: DFN2DIP-PN3F0-080D080US830-RLLFLL

**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 | 11.51            | 12.33 | 12.48 | 13.31 | 14.60 | 7.47           | 8.30  | 8.45  | 9.28  | 10.57 |
|                 | 3H   | 13.18            | 13.91 | 14.16 | 14.90 | 16.21 | 8.66           | 9.39  | 9.64  | 10.38 | 11.69 |
|                 | 4H   | 13.78            | 14.48 | 14.78 | 15.47 | 16.79 | 9.10           | 9.80  | 10.10 | 10.79 | 12.11 |
|                 | 6H   | 14.20            | 14.84 | 15.21 | 15.84 | 17.17 | 9.42           | 10.06 | 10.42 | 11.06 | 12.39 |
|                 | 8H   | 14.32            | 14.93 | 15.34 | 15.95 | 17.27 | 9.51           | 10.11 | 10.52 | 11.13 | 12.46 |
|                 | 12H  | 14.38            | 14.96 | 15.40 | 15.97 | 17.32 | 9.55           | 10.12 | 10.56 | 11.13 | 12.48 |
| 4H              | 2H   | 11.52            | 12.22 | 12.53 | 13.21 | 14.53 | 8.07           | 8.76  | 9.07  | 9.76  | 11.07 |
|                 | 3H   | 13.35            | 13.92 | 14.36 | 14.95 | 16.28 | 9.41           | 9.99  | 10.42 | 11.01 | 12.34 |
|                 | 4H   | 14.03            | 14.56 | 15.05 | 15.58 | 16.93 | 9.95           | 10.48 | 10.97 | 11.49 | 12.85 |
|                 | 6H   | 14.54            | 15.00 | 15.57 | 16.03 | 17.39 | 10.36          | 10.82 | 11.39 | 11.86 | 13.21 |
|                 | 8H   | 14.71            | 15.14 | 15.74 | 16.17 | 17.53 | 10.49          | 10.91 | 11.52 | 11.94 | 13.31 |
|                 | 12H  | 14.80            | 15.19 | 15.85 | 16.23 | 17.60 | 10.55          | 10.93 | 11.60 | 11.98 | 13.35 |
| 8H              | 4H   | 14.00            | 14.42 | 15.03 | 15.45 | 16.82 | 10.23          | 10.65 | 11.26 | 11.68 | 13.05 |
|                 | 6H   | 14.56            | 14.91 | 15.61 | 15.98 | 17.34 | 10.74          | 11.09 | 11.79 | 12.16 | 13.52 |
|                 | 8H   | 14.77            | 15.08 | 15.83 | 16.14 | 17.52 | 10.92          | 11.23 | 11.98 | 12.29 | 13.67 |
|                 | 12H  | 14.90            | 15.17 | 15.97 | 16.23 | 17.65 | 11.04          | 11.31 | 12.10 | 12.36 | 13.79 |
| 12H             | 4H   | 13.95            | 14.33 | 15.00 | 15.38 | 16.75 | 10.23          | 10.61 | 11.28 | 11.66 | 13.03 |
|                 | 6H   | 14.53            | 14.84 | 15.59 | 15.90 | 17.28 | 10.78          | 11.09 | 11.85 | 12.15 | 13.53 |
|                 | 8H   | 14.75            | 15.02 | 15.81 | 16.07 | 17.50 | 10.99          | 11.26 | 12.05 | 12.31 | 13.74 |