

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: P902652

Luminaire Tested: DFN2DIP-HX3F0-080D060US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P902652  
REPORT IS A COMBINATION OF REPORTS P899254 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-080D060US830-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

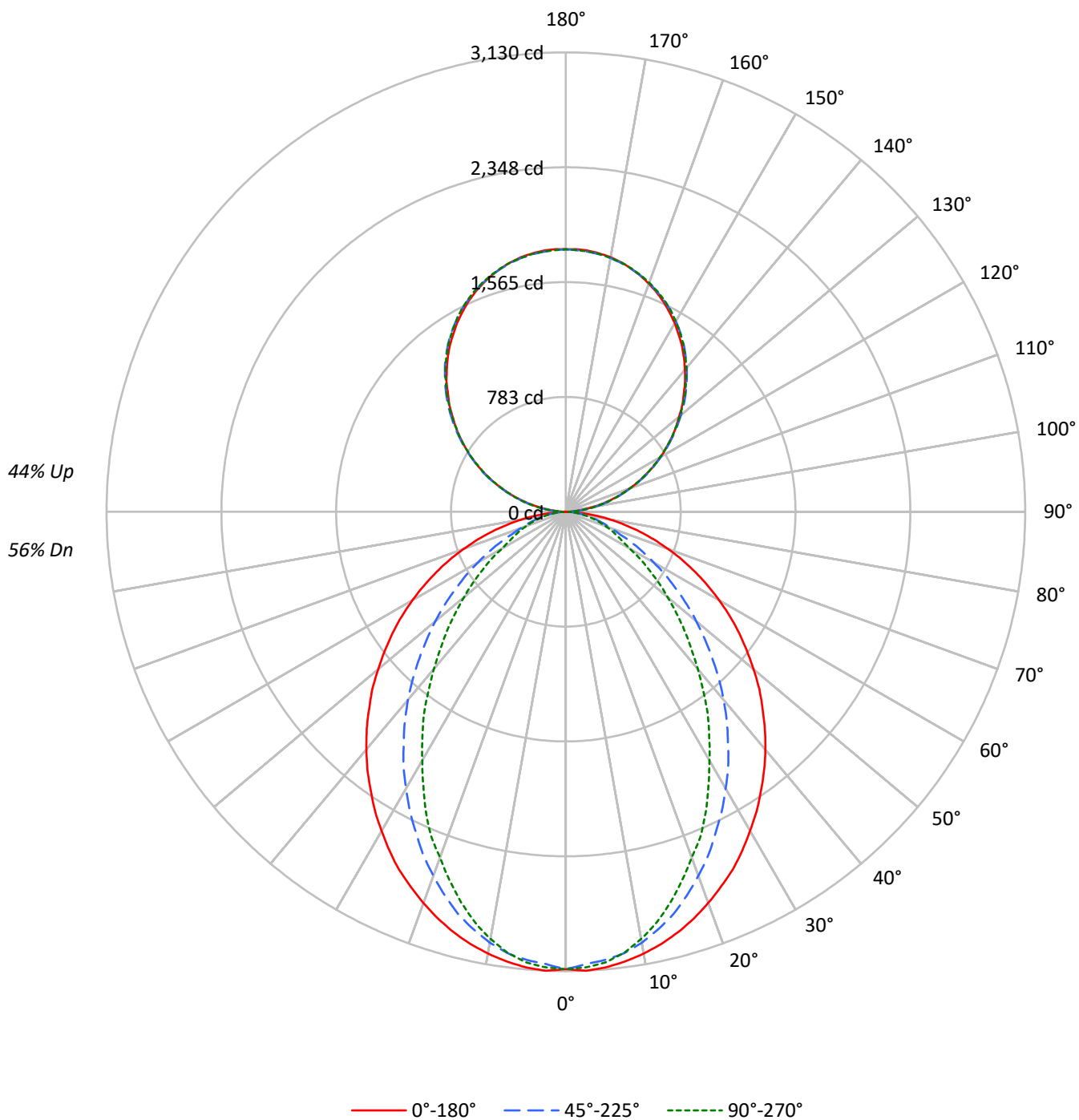
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11414.2 lumens  
Efficiency: N/A  
Efficacy: 91.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 125.3  
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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CATALOG NUMBER: DFN2DIP-HX3F0-080D060US830-RLFL

### Luminous Intensity Polar Plot



TEST NUMBER: P902652

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3610 | 3610 | 3610 |
| 5°  | 3614 | 3550 | 3573 |
| 10° | 3577 | 3478 | 3455 |
| 15° | 3526 | 3361 | 3274 |
| 20° | 3459 | 3200 | 3051 |
| 25° | 3391 | 3020 | 2837 |
| 30° | 3299 | 2836 | 2566 |
| 35° | 3210 | 2638 | 2327 |
| 40° | 3119 | 2434 | 2054 |
| 45° | 3013 | 2207 | 1807 |
| 50° | 2903 | 1979 | 1566 |
| 55° | 2789 | 1736 | 1334 |
| 60° | 2656 | 1481 | 1096 |
| 65° | 2503 | 1223 | 984  |
| 70° | 2318 | 982  | 888  |
| 75° | 2085 | 860  | 804  |
| 80° | 1747 | 714  | 690  |
| 85° | 1194 | 464  | 507  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3013 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 292.1   | 2.6       |
| 10°-20°   | 801.8   | 7.0       |
| 20°-30°   | 1125.7  | 9.9       |
| 30°-40°   | 1227.1  | 10.8      |
| 40°-50°   | 1127.8  | 9.9       |
| 50°-60°   | 885.7   | 7.8       |
| 60°-70°   | 576.5   | 5.1       |
| 70°-80°   | 296.8   | 2.6       |
| 80°-90°   | 80.8    | 0.7       |
| 90°-100°  | 110.7   | 1.0       |
| 100°-110° | 351.6   | 3.1       |
| 110°-120° | 601.8   | 5.3       |
| 120°-130° | 791.4   | 6.9       |
| 130°-140° | 888.4   | 7.8       |
| 140°-150° | 871.1   | 7.6       |
| 150°-160° | 730.8   | 6.4       |
| 160°-170° | 484.6   | 4.2       |
| 170°-180° | 169.4   | 1.5       |
| 0°-30°    | 2219.6  | 19.4      |
| 0°-40°    | 3446.7  | 30.2      |
| 0°-60°    | 5460.2  | 47.8      |
| 0°-90°    | 6414.4  | 56.2      |
| 90°-120°  | 1064.1  | 9.3       |
| 90°-150°  | 3615.0  | 31.7      |
| 90°-180°  | 5000.0  | 43.8      |
| 0°-180°   | 11414.2 | 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    | 19    | 53   | 50    | 51   | 11   |
| 95°  | 79   | 94    | 96   | 96    | 94   | 88   |
| 105° | 325  | 329   | 332  | 335   | 335  | 343  |
| 115° | 604  | 613   | 610  | 608   | 604  | 597  |
| 125° | 878  | 892   | 888  | 883   | 881  | 785  |
| 135° | 1136 | 1153  | 1156 | 1154  | 1150 | 878  |
| 145° | 1379 | 1390  | 1399 | 1400  | 1394 | 862  |
| 155° | 1577 | 1582  | 1586 | 1594  | 1589 | 726  |
| 165° | 1716 | 1714  | 1714 | 1725  | 1717 | 484  |
| 175° | 1785 | 1781  | 1778 | 1789  | 1779 | 170  |
| 180° | 1789 | 1789  | 1789 | 1789  | 1789 |      |

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**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°    | 1.6    | 19.4   | 52.9   | 49.6   | 51.2   |
| 92.5°  | 33.5   | 45.3   | 46.9   | 48.5   | 48.5   |
| 95°    | 78.7   | 93.8   | 96.5   | 96.5   | 93.8   |
| 97.5°  | 131.0  | 145.1  | 151.0  | 151.0  | 151.0  |
| 100°   | 191.4  | 203.8  | 208.1  | 208.1  | 206.5  |
| 102.5° | 255.1  | 264.2  | 270.1  | 271.7  | 270.1  |
| 105°   | 324.6  | 328.9  | 332.2  | 334.9  | 334.9  |
| 107.5° | 393.6  | 400.1  | 400.1  | 401.1  | 393.6  |
| 110°   | 460.5  | 469.1  | 469.1  | 469.1  | 464.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 532.7  | 541.9  | 540.3  | 535.9  | 532.7  |
| 115°   | 603.9  | 612.6  | 609.8  | 608.2  | 603.9  |
| 117.5° | 674.6  | 686.5  | 678.8  | 674.6  | 670.2  |
| 120°   | 745.7  | 757.6  | 745.7  | 745.7  | 740.8  |
| 122.5° | 810.4  | 825.5  | 817.9  | 813.7  | 810.4  |
| 125°   | 878.4  | 891.8  | 887.5  | 882.7  | 881.1  |
| 127.5° | 944.7  | 961.4  | 955.5  | 949.0  | 944.7  |
| 130°   | 1006.7 | 1026.1 | 1023.4 | 1020.2 | 1014.3 |
| 132.5° | 1076.3 | 1091.4 | 1092.4 | 1084.9 | 1080.5 |
| 135°   | 1136.1 | 1152.8 | 1156.0 | 1154.4 | 1150.1 |
| 137.5° | 1203.0 | 1216.4 | 1219.2 | 1218.0 | 1211.6 |
| 140°   | 1261.8 | 1275.3 | 1282.8 | 1282.8 | 1276.9 |
| 142.5° | 1322.1 | 1335.6 | 1339.9 | 1341.5 | 1335.6 |
| 145°   | 1379.3 | 1390.1 | 1398.7 | 1400.3 | 1394.4 |
| 147.5° | 1430.5 | 1444.0 | 1450.5 | 1453.1 | 1447.2 |
| 150°   | 1483.4 | 1492.5 | 1498.5 | 1503.3 | 1498.5 |
| 152.5° | 1530.2 | 1539.5 | 1547.0 | 1552.9 | 1547.0 |
| 155°   | 1577.2 | 1581.5 | 1586.3 | 1593.9 | 1589.0 |
| 157.5° | 1617.6 | 1620.9 | 1623.5 | 1634.4 | 1626.8 |
| 160°   | 1653.8 | 1657.0 | 1658.6 | 1667.7 | 1661.3 |
| 162.5° | 1687.2 | 1687.2 | 1688.8 | 1699.0 | 1691.5 |
| 165°   | 1715.7 | 1714.1 | 1714.1 | 1724.9 | 1717.4 |
| 167.5° | 1741.6 | 1736.8 | 1736.8 | 1747.6 | 1740.0 |
| 170°   | 1761.0 | 1756.7 | 1755.1 | 1765.9 | 1756.7 |
| 172.5° | 1774.5 | 1770.2 | 1768.6 | 1779.3 | 1770.2 |
| 175°   | 1785.3 | 1781.0 | 1777.7 | 1788.6 | 1779.3 |
| 177.5° | 1791.2 | 1787.0 | 1783.7 | 1792.8 | 1783.7 |
| 180°   | 1788.6 | 1788.6 | 1788.6 | 1788.6 | 1788.6 |

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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 | 12.12            | 13.01 | 13.03 | 13.93 | 15.11 | 8.10           | 8.98  | 9.01  | 9.91  | 11.09 |
|                 | 3H   | 13.80            | 14.59 | 14.72 | 15.52 | 16.73 | 9.29           | 10.08 | 10.21 | 11.01 | 12.22 |
|                 | 4H   | 14.40            | 15.15 | 15.34 | 16.09 | 17.30 | 9.74           | 10.48 | 10.67 | 11.42 | 12.64 |
|                 | 6H   | 14.82            | 15.51 | 15.77 | 16.45 | 17.68 | 10.06          | 10.74 | 11.00 | 11.69 | 12.92 |
|                 | 8H   | 14.94            | 15.60 | 15.90 | 16.56 | 17.79 | 10.15          | 10.80 | 11.10 | 11.76 | 12.99 |
|                 | 12H  | 15.00            | 15.63 | 15.96 | 16.58 | 17.83 | 10.19          | 10.81 | 11.15 | 11.77 | 13.02 |
| 4H              | 2H   | 12.15            | 12.89 | 13.09 | 13.83 | 15.05 | 8.70           | 9.44  | 9.64  | 10.38 | 11.60 |
|                 | 3H   | 13.97            | 14.59 | 14.92 | 15.56 | 16.79 | 10.05          | 10.67 | 11.00 | 11.63 | 12.87 |
|                 | 4H   | 14.66            | 15.23 | 15.62 | 16.19 | 17.44 | 10.59          | 11.16 | 11.55 | 12.12 | 13.38 |
|                 | 6H   | 15.17            | 15.66 | 16.14 | 16.64 | 17.90 | 11.01          | 11.50 | 11.98 | 12.48 | 13.74 |
|                 | 8H   | 15.34            | 15.80 | 16.32 | 16.78 | 18.04 | 11.14          | 11.59 | 12.11 | 12.57 | 13.84 |
|                 | 12H  | 15.44            | 15.84 | 16.43 | 16.84 | 18.11 | 11.20          | 11.61 | 12.20 | 12.61 | 13.88 |
| 8H              | 4H   | 14.63            | 15.08 | 15.61 | 16.06 | 17.33 | 10.87          | 11.33 | 11.85 | 12.31 | 13.57 |
|                 | 6H   | 15.19            | 15.56 | 16.19 | 16.59 | 17.85 | 11.39          | 11.76 | 12.39 | 12.78 | 14.05 |
|                 | 8H   | 15.40            | 15.73 | 16.41 | 16.74 | 18.03 | 11.57          | 11.90 | 12.58 | 12.91 | 14.20 |
|                 | 12H  | 15.54            | 15.83 | 16.55 | 16.83 | 18.16 | 11.69          | 11.98 | 12.70 | 12.98 | 14.32 |
| 12H             | 4H   | 14.58            | 14.99 | 15.58 | 15.99 | 17.26 | 10.88          | 11.29 | 11.87 | 12.28 | 13.56 |
|                 | 6H   | 15.17            | 15.50 | 16.17 | 16.51 | 17.79 | 11.43          | 11.76 | 12.44 | 12.77 | 14.06 |
|                 | 8H   | 15.38            | 15.67 | 16.39 | 16.68 | 18.01 | 11.64          | 11.93 | 12.65 | 12.94 | 14.27 |