

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: P906455

Luminaire Tested: DFN2DIP-SQ3F0-070D050US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906455  
REPORT IS A COMBINATION OF REPORTS P901406 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-070D050US835-RLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

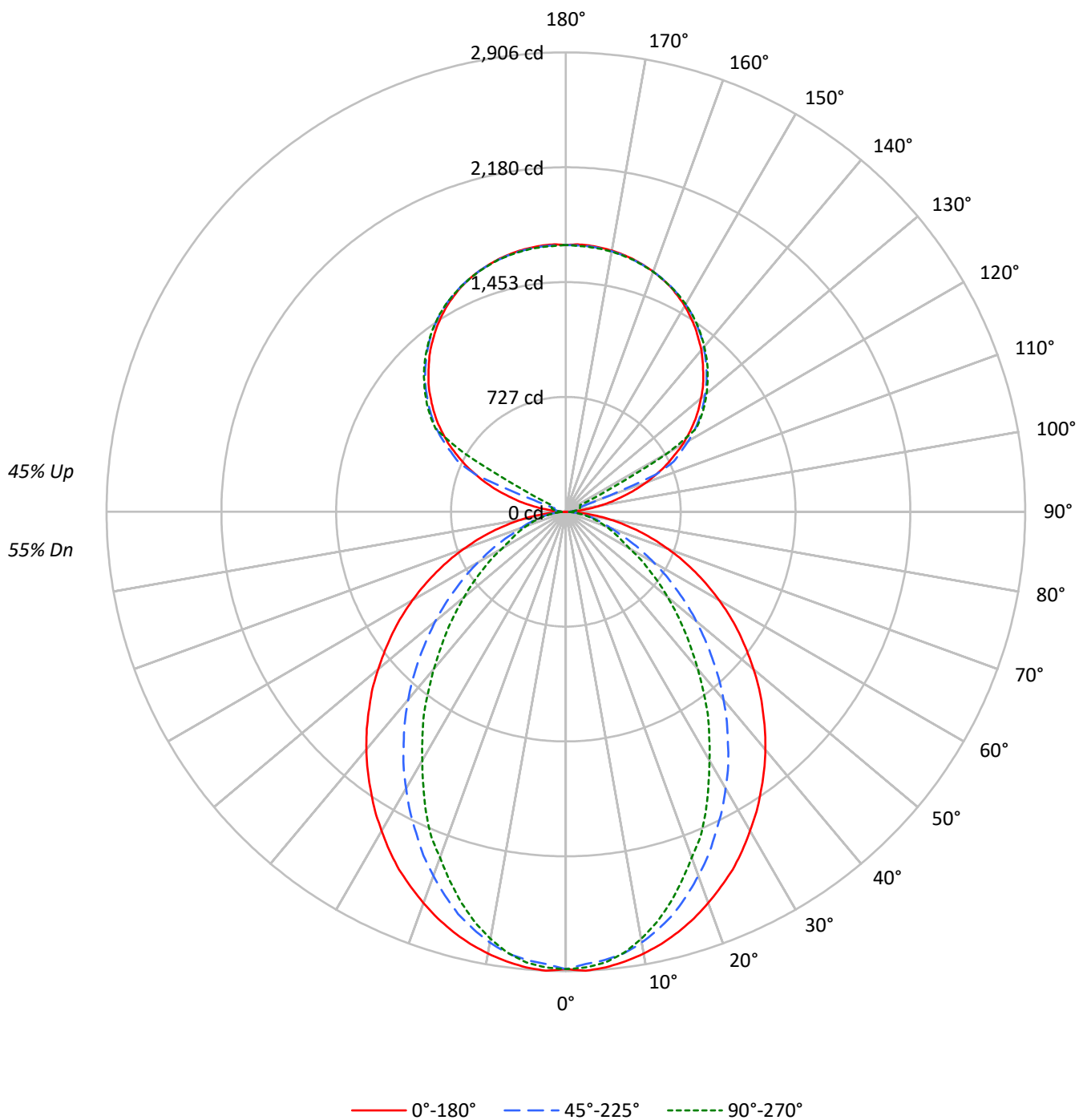
Lumens per Lamp: N/A  
Luminaire Lumens: 10900.0 lumens  
Efficiency: N/A  
Efficacy: 106.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 102.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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°  | 3315 | 3315 | 3315 |
| 5°  | 3318 | 3260 | 3282 |
| 10° | 3283 | 3194 | 3174 |
| 15° | 3236 | 3086 | 3008 |
| 20° | 3174 | 2939 | 2805 |
| 25° | 3111 | 2774 | 2608 |
| 30° | 3026 | 2605 | 2360 |
| 35° | 2943 | 2423 | 2141 |
| 40° | 2859 | 2236 | 1891 |
| 45° | 2761 | 2028 | 1664 |
| 50° | 2660 | 1818 | 1442 |
| 55° | 2553 | 1595 | 1230 |
| 60° | 2431 | 1361 | 1011 |
| 65° | 2289 | 1124 | 909  |
| 70° | 2117 | 903  | 821  |
| 75° | 1901 | 791  | 744  |
| 80° | 1589 | 657  | 642  |
| 85° | 1077 | 428  | 476  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2761 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 271.1   | 2.5       |
| 10°-20°   | 744.3   | 6.8       |
| 20°-30°   | 1045.0  | 9.6       |
| 30°-40°   | 1139.2  | 10.5      |
| 40°-50°   | 1047.0  | 9.6       |
| 50°-60°   | 822.3   | 7.5       |
| 60°-70°   | 535.2   | 4.9       |
| 70°-80°   | 275.5   | 2.5       |
| 80°-90°   | 73.3    | 0.7       |
| 90°-100°  | 55.7    | 0.5       |
| 100°-110° | 207.4   | 1.9       |
| 110°-120° | 550.1   | 5.0       |
| 120°-130° | 912.4   | 8.4       |
| 130°-140° | 969.2   | 8.9       |
| 140°-150° | 900.8   | 8.3       |
| 150°-160° | 724.2   | 6.6       |
| 160°-170° | 466.6   | 4.3       |
| 170°-180° | 160.6   | 1.5       |
| 0°-30°    | 2060.5  | 18.9      |
| 0°-40°    | 3199.7  | 29.4      |
| 0°-60°    | 5068.9  | 46.5      |
| 0°-90°    | 5952.9  | 54.6      |
| 90°-120°  | 813.2   | 7.5       |
| 90°-150°  | 3595.6  | 33.0      |
| 90°-180°  | 4947.0  | 45.4      |
| 0°-180°   | 10900.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2893 | 2893  | 2893 | 2893  | 2893 |      |
| 5°   | 2893 | 2880  | 2846 | 2870  | 2862 | 274  |
| 15°  | 2752 | 2723  | 2634 | 2584  | 2558 | 775  |
| 25°  | 2498 | 2414  | 2241 | 2134  | 2094 | 1149 |
| 35°  | 2152 | 2019  | 1788 | 1623  | 1566 | 1347 |
| 45°  | 1760 | 1584  | 1309 | 1123  | 1060 | 1359 |
| 55°  | 1338 | 1134  | 851  | 694   | 644  | 1195 |
| 65°  | 903  | 691   | 456  | 367   | 359  | 896  |
| 75°  | 482  | 298   | 209  | 191   | 189  | 509  |
| 85°  | 112  | 58    | 50   | 50    | 50   | 129  |
| 90°  | 1    | 15    | 24   | 31    | 33   | 10   |
| 95°  | 79   | 39    | 48   | 54    | 52   | 94   |
| 105° | 371  | 408   | 74   | 88    | 93   | 397  |
| 115° | 702  | 723   | 753  | 188   | 100  | 691  |
| 125° | 993  | 1009  | 1032 | 1040  | 1044 | 885  |
| 135° | 1228 | 1248  | 1259 | 1271  | 1269 | 949  |
| 145° | 1425 | 1424  | 1444 | 1453  | 1447 | 891  |
| 155° | 1569 | 1558  | 1573 | 1580  | 1570 | 723  |
| 165° | 1653 | 1646  | 1650 | 1658  | 1650 | 467  |
| 175° | 1691 | 1682  | 1685 | 1694  | 1681 | 161  |
| 180° | 1687 | 1687  | 1687 | 1687  | 1687 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2893.1 | 2893.1 | 2893.1 | 2893.1 | 2893.1 |
| 2.5°   | 2906.1 | 2893.1 | 2864.2 | 2890.6 | 2885.3 |
| 5°     | 2893.1 | 2880.0 | 2845.9 | 2869.5 | 2861.7 |
| 7.5°   | 2869.5 | 2853.9 | 2817.3 | 2827.5 | 2814.5 |
| 10°    | 2838.1 | 2819.8 | 2767.5 | 2759.5 | 2743.9 |
| 12.5°  | 2798.9 | 2775.3 | 2704.5 | 2688.9 | 2660.0 |
| 15°    | 2751.7 | 2722.8 | 2633.9 | 2584.2 | 2558.1 |
| 17.5°  | 2696.7 | 2654.8 | 2544.8 | 2487.2 | 2445.3 |
| 20°    | 2633.9 | 2581.4 | 2450.6 | 2385.3 | 2327.5 |
| 22.5°  | 2565.9 | 2505.6 | 2353.6 | 2264.7 | 2225.6 |
| 25°    | 2497.8 | 2413.9 | 2241.1 | 2133.9 | 2094.5 |
| 27.5°  | 2416.7 | 2327.5 | 2136.4 | 2013.4 | 1953.1 |
| 30°    | 2330.3 | 2230.6 | 2021.1 | 1887.8 | 1817.0 |
| 32.5°  | 2246.4 | 2125.9 | 1911.4 | 1754.2 | 1688.6 |
| 35°    | 2152.2 | 2018.6 | 1788.4 | 1623.4 | 1565.6 |
| 37.5°  | 2060.6 | 1916.4 | 1673.1 | 1492.2 | 1427.0 |
| 40°    | 1963.6 | 1806.7 | 1552.5 | 1366.7 | 1298.6 |
| 42.5°  | 1864.2 | 1696.7 | 1432.2 | 1238.3 | 1173.1 |
| 45°    | 1759.5 | 1583.9 | 1309.2 | 1123.1 | 1060.3 |
| 47.5°  | 1660.0 | 1474.2 | 1191.4 | 1005.3 | 947.8  |
| 50°    | 1550.0 | 1364.2 | 1076.1 | 895.3  | 840.6  |
| 52.5°  | 1442.5 | 1246.1 | 966.1  | 793.3  | 743.6  |
| 55°    | 1337.8 | 1133.6 | 850.8  | 693.9  | 644.2  |
| 57.5°  | 1230.6 | 1021.1 | 748.9  | 602.2  | 560.3  |
| 60°    | 1120.6 | 911.1  | 641.4  | 508.1  | 466.1  |
| 62.5°  | 1013.3 | 803.9  | 549.7  | 424.2  | 403.3  |
| 65°    | 903.3  | 691.1  | 455.6  | 366.7  | 358.6  |
| 67.5°  | 798.6  | 586.4  | 366.7  | 321.9  | 314.2  |
| 70°    | 688.6  | 484.4  | 303.6  | 277.5  | 266.9  |
| 72.5°  | 583.9  | 390.0  | 253.9  | 233.1  | 227.8  |
| 75°    | 481.7  | 298.3  | 209.4  | 191.1  | 188.6  |
| 77.5°  | 379.7  | 211.9  | 165.0  | 154.4  | 149.2  |
| 80°    | 285.3  | 151.9  | 125.6  | 115.3  | 115.3  |
| 82.5°  | 198.9  | 102.2  | 86.4   | 81.1   | 81.1   |
| 85°    | 112.5  | 57.5   | 49.7   | 49.7   | 49.7   |
| 87.5°  | 41.9   | 20.8   | 20.8   | 18.3   | 18.3   |
| 90°    | 1.2    | 14.6   | 24.4   | 30.6   | 32.9   |
| 92.5°  | 30.6   | 25.7   | 29.3   | 31.8   | 32.9   |
| 95°    | 79.3   | 39.0   | 47.6   | 53.8   | 52.5   |
| 97.5°  | 142.8  | 42.8   | 62.2   | 66.0   | 67.1   |
| 100°   | 216.2  | 48.9   | 69.6   | 79.3   | 81.8   |
| 102.5° | 296.7  | 294.3  | 72.1   | 85.4   | 89.2   |
| 105°   | 371.2  | 407.9  | 74.5   | 87.9   | 92.8   |
| 107.5° | 457.9  | 488.3  | 77.0   | 90.3   | 95.3   |
| 110°   | 541.0  | 566.5  | 213.7  | 91.6   | 96.4   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 619.1  | 641.0  | 620.3  | 94.0   | 97.7   |
| 115°   | 702.1  | 722.8  | 753.4  | 188.1  | 100.2  |
| 117.5° | 774.1  | 798.5  | 819.4  | 644.6  | 324.8  |
| 120°   | 854.7  | 873.0  | 895.0  | 909.7  | 744.8  |
| 122.5° | 923.0  | 942.6  | 967.1  | 974.4  | 975.7  |
| 125°   | 992.6  | 1008.6 | 1031.8 | 1040.3 | 1044.0 |
| 127.5° | 1056.1 | 1073.2 | 1091.7 | 1103.8 | 1105.0 |
| 130°   | 1116.0 | 1135.6 | 1148.9 | 1162.4 | 1161.3 |
| 132.5° | 1177.1 | 1193.0 | 1206.3 | 1217.4 | 1216.2 |
| 135°   | 1228.4 | 1248.0 | 1258.8 | 1271.2 | 1268.7 |
| 137.5° | 1282.0 | 1296.7 | 1309.0 | 1321.2 | 1317.6 |
| 140°   | 1334.5 | 1344.4 | 1357.7 | 1368.7 | 1362.7 |
| 142.5° | 1378.6 | 1387.2 | 1403.0 | 1412.7 | 1406.6 |
| 145°   | 1425.0 | 1423.7 | 1444.4 | 1453.0 | 1446.9 |
| 147.5° | 1465.2 | 1461.5 | 1482.3 | 1488.4 | 1483.6 |
| 150°   | 1504.3 | 1495.8 | 1515.3 | 1522.6 | 1516.5 |
| 152.5° | 1537.2 | 1527.5 | 1545.8 | 1553.2 | 1544.6 |
| 155°   | 1569.0 | 1558.1 | 1572.7 | 1580.0 | 1570.3 |
| 157.5° | 1594.6 | 1584.9 | 1595.9 | 1604.5 | 1594.6 |
| 160°   | 1616.7 | 1609.3 | 1616.7 | 1623.9 | 1615.4 |
| 162.5° | 1636.1 | 1628.9 | 1634.9 | 1643.5 | 1632.5 |
| 165°   | 1653.2 | 1646.0 | 1649.6 | 1658.1 | 1649.6 |
| 167.5° | 1666.7 | 1659.3 | 1663.1 | 1671.6 | 1660.6 |
| 170°   | 1677.7 | 1670.3 | 1672.8 | 1681.3 | 1670.3 |
| 172.5° | 1685.0 | 1677.7 | 1680.2 | 1688.7 | 1677.7 |
| 175°   | 1691.1 | 1682.5 | 1685.0 | 1693.5 | 1681.3 |
| 177.5° | 1693.5 | 1685.0 | 1686.3 | 1694.8 | 1683.8 |
| 180°   | 1687.4 | 1687.4 | 1687.4 | 1687.4 | 1687.4 |

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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 | 11.70            | 12.57 | 12.62 | 13.50 | 14.71 | 7.66           | 8.53  | 8.58  | 9.46  | 10.67 |
|                 | 3H   | 13.37            | 14.15 | 14.31 | 15.10 | 16.33 | 8.84           | 9.62  | 9.78  | 10.57 | 11.80 |
|                 | 4H   | 13.98            | 14.72 | 14.93 | 15.67 | 16.91 | 9.29           | 10.03 | 10.24 | 10.98 | 12.22 |
|                 | 6H   | 14.40            | 15.08 | 15.36 | 16.03 | 17.29 | 9.61           | 10.28 | 10.57 | 11.24 | 12.49 |
|                 | 8H   | 14.53            | 15.17 | 15.49 | 16.14 | 17.39 | 9.70           | 10.34 | 10.66 | 11.31 | 12.56 |
|                 | 12H  | 14.59            | 15.20 | 15.56 | 16.17 | 17.44 | 9.74           | 10.35 | 10.71 | 11.32 | 12.59 |
| 4H              | 2H   | 11.72            | 12.45 | 12.67 | 13.40 | 14.64 | 8.26           | 8.99  | 9.21  | 9.94  | 11.18 |
|                 | 3H   | 13.55            | 14.16 | 14.51 | 15.14 | 16.39 | 9.60           | 10.21 | 10.57 | 11.19 | 12.45 |
|                 | 4H   | 14.24            | 14.79 | 15.21 | 15.77 | 17.05 | 10.15          | 10.70 | 11.12 | 11.68 | 12.96 |
|                 | 6H   | 14.75            | 15.23 | 15.74 | 16.23 | 17.50 | 10.56          | 11.04 | 11.55 | 12.04 | 13.32 |
|                 | 8H   | 14.92            | 15.37 | 15.91 | 16.36 | 17.65 | 10.69          | 11.13 | 11.68 | 12.13 | 13.42 |
|                 | 12H  | 15.02            | 15.42 | 16.02 | 16.43 | 17.72 | 10.75          | 11.15 | 11.76 | 12.16 | 13.46 |
| 8H              | 4H   | 14.21            | 14.65 | 15.19 | 15.64 | 16.93 | 10.43          | 10.87 | 11.41 | 11.87 | 13.16 |
|                 | 6H   | 14.77            | 15.14 | 15.78 | 16.17 | 17.46 | 10.94          | 11.31 | 11.95 | 12.34 | 13.63 |
|                 | 8H   | 14.98            | 15.31 | 16.00 | 16.33 | 17.63 | 11.12          | 11.45 | 12.15 | 12.47 | 13.78 |
|                 | 12H  | 15.12            | 15.40 | 16.14 | 16.42 | 17.77 | 11.24          | 11.53 | 12.26 | 12.54 | 13.89 |
| 12H             | 4H   | 14.16            | 14.56 | 15.17 | 15.57 | 16.87 | 10.43          | 10.84 | 11.44 | 11.84 | 13.14 |
|                 | 6H   | 14.74            | 15.07 | 15.76 | 16.09 | 17.40 | 10.99          | 11.31 | 12.01 | 12.33 | 13.64 |
|                 | 8H   | 14.96            | 15.25 | 15.98 | 16.26 | 17.62 | 11.19          | 11.48 | 12.22 | 12.49 | 13.85 |