

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: P925338

Luminaire Tested: DFN2DIP-SQ2F0-040D080US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925338  
REPORT IS A COMBINATION OF REPORTS P899834 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-040D080US950-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

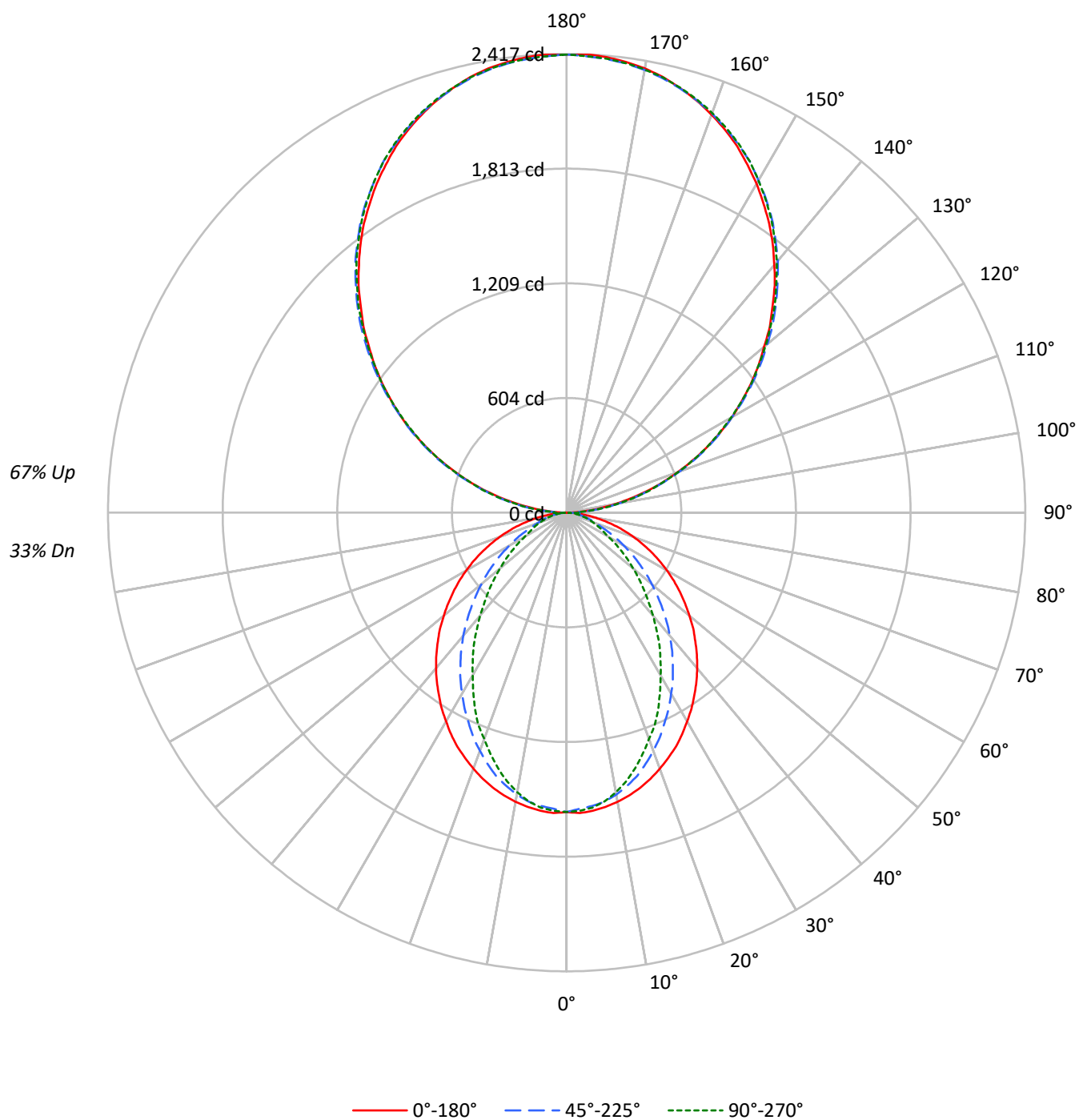
Lumens per Lamp: N/A  
Luminaire Lumens: 9997.9 lumens  
Efficiency: N/A  
Efficacy: 101.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 98.7  
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

TEST NUMBER: P925338

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### Luminous Intensity Polar Plot



TEST NUMBER: P925338

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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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 |
| 8   | 52  | 40  | 33  | 28  | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3468 | 3468 | 3468 |
| 5°  | 3468 | 3405 | 3430 |
| 10° | 3427 | 3331 | 3314 |
| 15° | 3374 | 3214 | 3137 |
| 20° | 3306 | 3055 | 2921 |
| 25° | 3235 | 2878 | 2713 |
| 30° | 3143 | 2698 | 2451 |
| 35° | 3053 | 2505 | 2221 |
| 40° | 2961 | 2306 | 1958 |
| 45° | 2854 | 2086 | 1720 |
| 50° | 2743 | 1865 | 1487 |
| 55° | 2626 | 1629 | 1265 |
| 60° | 2491 | 1384 | 1036 |
| 65° | 2336 | 1136 | 927  |
| 70° | 2147 | 905  | 832  |
| 75° | 1908 | 783  | 747  |
| 80° | 1567 | 636  | 634  |
| 85° | 1020 | 395  | 451  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3367 cd/sqm

TEST NUMBER: P925338

CATALOG NUMBER: DFN2DIP-SQ2F0-040D080US950-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 147.8  | 1.5       |
| 10°-20°   | 405.8  | 4.1       |
| 20°-30°   | 569.7  | 5.7       |
| 30°-40°   | 621.0  | 6.2       |
| 40°-50°   | 570.8  | 5.7       |
| 50°-60°   | 448.2  | 4.5       |
| 60°-70°   | 291.8  | 2.9       |
| 70°-80°   | 150.2  | 1.5       |
| 80°-90°   | 45.2   | 0.5       |
| 90°-100°  | 149.4  | 1.5       |
| 100°-110° | 474.6  | 4.7       |
| 110°-120° | 812.1  | 8.1       |
| 120°-130° | 1068.1 | 10.7      |
| 130°-140° | 1198.9 | 12.0      |
| 140°-150° | 1175.6 | 11.8      |
| 150°-160° | 986.2  | 9.9       |
| 160°-170° | 654.0  | 6.5       |
| 170°-180° | 228.6  | 2.3       |
| 0°-30°    | 1123.3 | 11.2      |
| 0°-40°    | 1744.3 | 17.4      |
| 0°-60°    | 2763.3 | 27.6      |
| 0°-90°    | 3250.5 | 32.5      |
| 90°-120°  | 1436.1 | 14.4      |
| 90°-150°  | 4878.6 | 48.8      |
| 90°-180°  | 6747.0 | 67.5      |
| 0°-180°   | 9997.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1577 | 1577  | 1577 | 1577  | 1577 |      |
| 5°   | 1577 | 1570  | 1551 | 1564  | 1560 | 150  |
| 15°  | 1500 | 1484  | 1436 | 1409  | 1395 | 423  |
| 25°  | 1362 | 1316  | 1222 | 1163  | 1142 | 626  |
| 35°  | 1173 | 1100  | 975  | 885   | 853  | 734  |
| 45°  | 959  | 864   | 714  | 612   | 578  | 741  |
| 55°  | 729  | 618   | 464  | 378   | 351  | 652  |
| 65°  | 492  | 377   | 248  | 200   | 196  | 488  |
| 75°  | 262  | 163   | 114  | 104   | 103  | 278  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 2    | 26    | 71   | 67    | 69   | 10   |
| 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 |      |

TEST NUMBER: P925338

CATALOG NUMBER: DFN2DIP-SQ2F0-040D080US950-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1577.2 | 1577.2 | 1577.2 | 1577.2 | 1577.2 |
| 2.5°   | 1584.3 | 1577.2 | 1561.4 | 1575.8 | 1572.9 |
| 5°     | 1577.2 | 1570.0 | 1551.4 | 1564.3 | 1560.1 |
| 7.5°   | 1564.3 | 1555.8 | 1535.8 | 1541.4 | 1534.3 |
| 10°    | 1547.2 | 1537.2 | 1508.7 | 1504.3 | 1495.9 |
| 12.5°  | 1525.8 | 1512.9 | 1474.3 | 1465.8 | 1450.1 |
| 15°    | 1500.1 | 1484.3 | 1435.9 | 1408.8 | 1394.6 |
| 17.5°  | 1470.1 | 1447.2 | 1387.2 | 1355.9 | 1333.0 |
| 20°    | 1435.9 | 1407.2 | 1335.9 | 1300.3 | 1268.8 |
| 22.5°  | 1398.8 | 1365.9 | 1283.0 | 1234.6 | 1213.3 |
| 25°    | 1361.6 | 1315.9 | 1221.7 | 1163.3 | 1141.7 |
| 27.5°  | 1317.5 | 1268.8 | 1164.6 | 1097.6 | 1064.7 |
| 30°    | 1270.3 | 1216.0 | 1101.8 | 1029.1 | 990.5  |
| 32.5°  | 1224.6 | 1158.9 | 1042.0 | 956.3  | 920.5  |
| 35°    | 1173.3 | 1100.4 | 974.9  | 884.9  | 853.4  |
| 37.5°  | 1123.3 | 1044.7 | 912.0  | 813.5  | 777.9  |
| 40°    | 1070.5 | 984.9  | 846.4  | 745.1  | 708.0  |
| 42.5°  | 1016.2 | 924.9  | 780.8  | 675.1  | 639.5  |
| 45°    | 959.2  | 863.5  | 713.7  | 612.3  | 578.0  |
| 47.5°  | 905.0  | 803.6  | 649.5  | 548.1  | 516.7  |
| 50°    | 845.0  | 743.6  | 586.6  | 488.1  | 458.2  |
| 52.5°  | 786.4  | 679.3  | 526.7  | 432.4  | 405.4  |
| 55°    | 729.3  | 618.0  | 463.8  | 378.3  | 351.2  |
| 57.5°  | 670.9  | 556.7  | 408.2  | 328.3  | 305.5  |
| 60°    | 610.8  | 496.7  | 349.6  | 276.9  | 254.1  |
| 62.5°  | 552.5  | 438.3  | 299.7  | 231.2  | 219.9  |
| 65°    | 492.5  | 376.7  | 248.3  | 199.9  | 195.5  |
| 67.5°  | 435.4  | 319.7  | 199.9  | 175.5  | 171.2  |
| 70°    | 375.4  | 264.1  | 165.5  | 151.3  | 145.5  |
| 72.5°  | 318.3  | 212.6  | 138.4  | 127.1  | 124.2  |
| 75°    | 262.5  | 162.7  | 114.2  | 104.2  | 102.8  |
| 77.5°  | 207.0  | 115.5  | 90.0   | 84.2   | 81.3   |
| 80°    | 155.5  | 82.8   | 68.4   | 62.9   | 62.9   |
| 82.5°  | 108.5  | 55.7   | 47.1   | 44.2   | 44.2   |
| 85°    | 61.3   | 31.4   | 27.1   | 27.1   | 27.1   |
| 87.5°  | 22.9   | 11.4   | 11.4   | 10.0   | 10.0   |
| 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  |

TEST NUMBER: P925338

CATALOG NUMBER: DFN2DIP-SQ2F0-040D080US950-RLLFLL

**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 |

TEST NUMBER: P925338

CATALOG NUMBER: DFN2DIP-SQ2F0-040D080US950-RLFL

**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 | 9.45             | 10.16 | 10.55 | 11.25 | 12.75 | 5.41           | 6.12 | 6.51  | 7.21  | 8.71  |
|                 | 3H   | 11.10            | 11.73 | 12.21 | 12.83 | 14.35 | 6.57           | 7.20 | 7.68  | 8.30  | 9.82  |
|                 | 4H   | 11.69            | 12.29 | 12.81 | 13.39 | 14.92 | 7.00           | 7.60 | 8.12  | 8.70  | 10.23 |
|                 | 6H   | 12.09            | 12.64 | 13.22 | 13.74 | 15.28 | 7.30           | 7.85 | 8.43  | 8.96  | 10.50 |
|                 | 8H   | 12.20            | 12.73 | 13.33 | 13.85 | 15.38 | 7.38           | 7.90 | 8.51  | 9.03  | 10.56 |
|                 | 12H  | 12.25            | 12.75 | 13.39 | 13.86 | 15.42 | 7.41           | 7.91 | 8.55  | 9.02  | 10.58 |
| 4H              | 2H   | 9.45             | 10.05 | 10.57 | 11.15 | 12.68 | 5.98           | 6.58 | 7.11  | 7.68  | 9.21  |
|                 | 3H   | 11.24            | 11.74 | 12.38 | 12.87 | 14.41 | 7.30           | 7.80 | 8.43  | 8.93  | 10.46 |
|                 | 4H   | 11.92            | 12.37 | 13.05 | 13.49 | 15.05 | 7.83           | 8.28 | 8.96  | 9.40  | 10.96 |
|                 | 6H   | 12.41            | 12.80 | 13.55 | 13.94 | 15.49 | 8.22           | 8.61 | 9.36  | 9.75  | 11.30 |
|                 | 8H   | 12.57            | 12.93 | 13.71 | 14.07 | 15.63 | 8.34           | 8.70 | 9.48  | 9.83  | 11.40 |
|                 | 12H  | 12.65            | 12.98 | 13.80 | 14.12 | 15.69 | 8.38           | 8.71 | 9.54  | 9.86  | 11.43 |
| 8H              | 4H   | 11.87            | 12.24 | 13.01 | 13.37 | 14.93 | 8.09           | 8.45 | 9.23  | 9.58  | 11.15 |
|                 | 6H   | 12.41            | 12.71 | 13.57 | 13.89 | 15.45 | 8.58           | 8.88 | 9.74  | 10.05 | 11.61 |
|                 | 8H   | 12.61            | 12.88 | 13.78 | 14.03 | 15.61 | 8.75           | 9.01 | 9.92  | 10.17 | 11.75 |
|                 | 12H  | 12.73            | 12.96 | 13.90 | 14.11 | 15.73 | 8.85           | 9.08 | 10.02 | 10.23 | 11.85 |
| 12H             | 4H   | 11.82            | 12.15 | 12.97 | 13.29 | 14.86 | 8.08           | 8.41 | 9.24  | 9.56  | 11.13 |
|                 | 6H   | 12.38            | 12.65 | 13.55 | 13.80 | 15.38 | 8.62           | 8.88 | 9.78  | 10.04 | 11.62 |
|                 | 8H   | 12.58            | 12.82 | 13.75 | 13.97 | 15.58 | 8.81           | 9.04 | 9.98  | 10.19 | 11.81 |