

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: P908938

Luminaire Tested: DFN2DIP-SQ2F0-030D060US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908938  
REPORT IS A COMBINATION OF REPORTS P899808 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-030D060US840-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

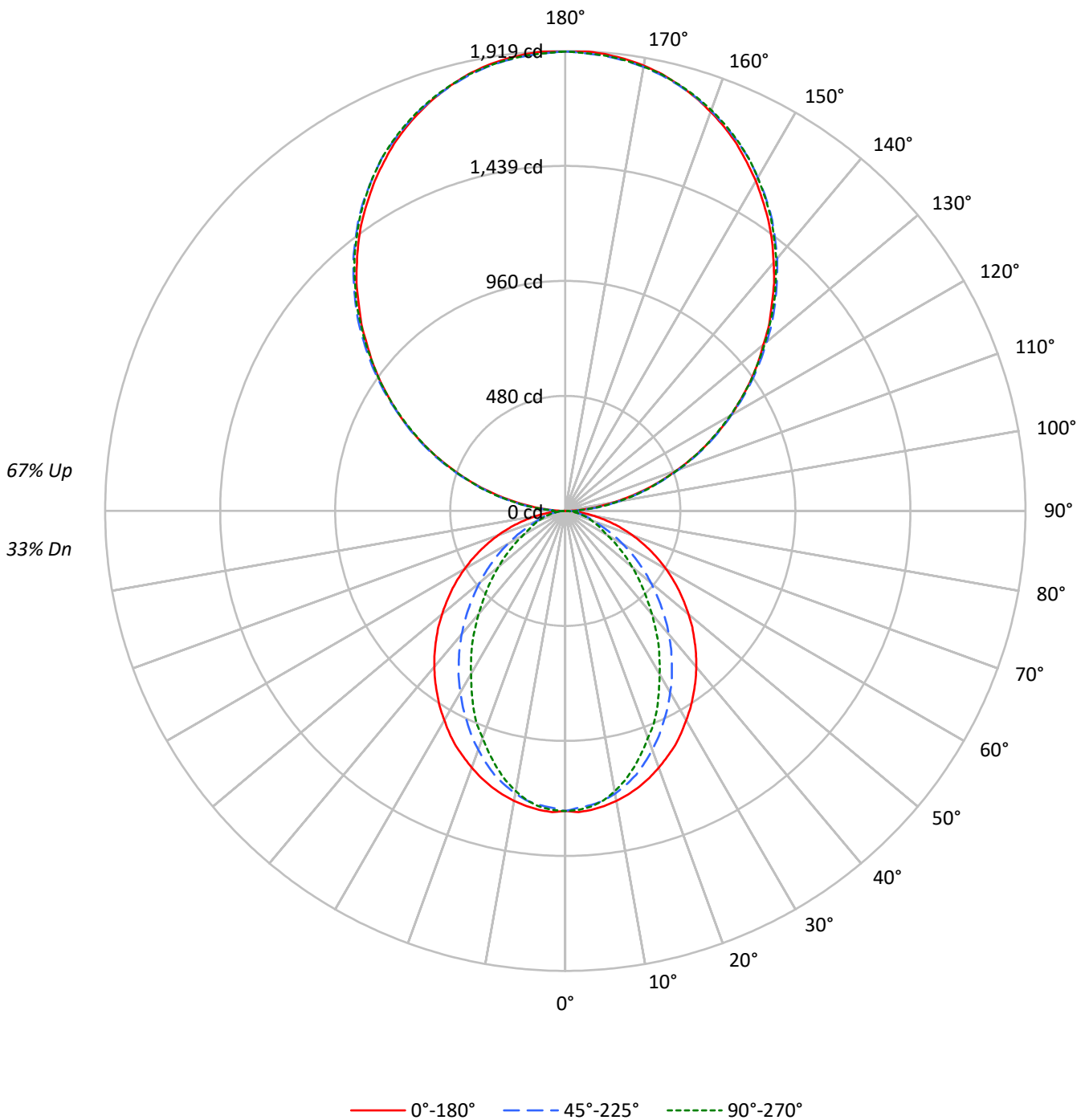
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7937.5 lumens  
Efficiency: N/A  
Efficacy: 115.2 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): 68.9  
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





TEST NUMBER: P908938

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |    |
| RC  | 80  |     |     |     | 70 |    |    |    | 50 |    |    |    | 30 |    |    |    | 10 |    |    |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |    |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 | 33 |    |    |    | 33 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 | 28 |    |    |    | 28 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 | 24 |    |    |    | 24 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 | 21 |    |    |    | 21 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 | 18 |    |    |    | 18 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 | 16 |    |    |    | 16 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 | 14 |    |    |    | 14 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 | 13 |    |    |    | 13 |
| 8   | 52  | 40  | 33  | 28  | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 | 11 |    |    |    | 11 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 | 10 |    |    |    | 10 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 | 9  |    |    |    | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2753 | 2753 | 2753 |
| 5°  | 2753 | 2704 | 2723 |
| 10° | 2721 | 2645 | 2631 |
| 15° | 2679 | 2551 | 2490 |
| 20° | 2624 | 2425 | 2319 |
| 25° | 2569 | 2285 | 2154 |
| 30° | 2496 | 2142 | 1946 |
| 35° | 2424 | 1989 | 1763 |
| 40° | 2350 | 1831 | 1555 |
| 45° | 2266 | 1656 | 1365 |
| 50° | 2178 | 1480 | 1181 |
| 55° | 2085 | 1293 | 1004 |
| 60° | 1978 | 1099 | 823  |
| 65° | 1854 | 902  | 736  |
| 70° | 1704 | 719  | 661  |
| 75° | 1515 | 622  | 593  |
| 80° | 1245 | 505  | 503  |
| 85° | 810  | 313  | 358  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2666 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 117.4  | 1.5       |
| 10°-20°   | 322.1  | 4.1       |
| 20°-30°   | 452.3  | 5.7       |
| 30°-40°   | 493.0  | 6.2       |
| 40°-50°   | 453.1  | 5.7       |
| 50°-60°   | 355.9  | 4.5       |
| 60°-70°   | 231.6  | 2.9       |
| 70°-80°   | 119.2  | 1.5       |
| 80°-90°   | 35.9   | 0.5       |
| 90°-100°  | 118.6  | 1.5       |
| 100°-110° | 376.8  | 4.7       |
| 110°-120° | 644.8  | 8.1       |
| 120°-130° | 848.0  | 10.7      |
| 130°-140° | 951.8  | 12.0      |
| 140°-150° | 933.4  | 11.8      |
| 150°-160° | 783.0  | 9.9       |
| 160°-170° | 519.2  | 6.5       |
| 170°-180° | 181.5  | 2.3       |
| 0°-30°    | 891.8  | 11.2      |
| 0°-40°    | 1384.8 | 17.4      |
| 0°-60°    | 2193.8 | 27.6      |
| 0°-90°    | 2580.6 | 32.5      |
| 90°-120°  | 1140.1 | 14.4      |
| 90°-150°  | 3873.3 | 48.8      |
| 90°-180°  | 5357.0 | 67.5      |
| 0°-180°   | 7937.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1252 | 1252  | 1252 | 1252  | 1252 |      |
| 5°   | 1252 | 1246  | 1232 | 1242  | 1238 | 119  |
| 15°  | 1191 | 1178  | 1140 | 1118  | 1107 | 336  |
| 25°  | 1081 | 1045  | 970  | 924   | 906  | 497  |
| 35°  | 932  | 874   | 774  | 703   | 678  | 583  |
| 45°  | 762  | 686   | 567  | 486   | 459  | 588  |
| 55°  | 579  | 491   | 368  | 300   | 279  | 517  |
| 65°  | 391  | 299   | 197  | 159   | 155  | 388  |
| 75°  | 208  | 129   | 91   | 83    | 82   | 220  |
| 85°  | 49   | 25    | 22   | 22    | 22   | 56   |
| 90°  | 2    | 21    | 57   | 53    | 55   | 8    |
| 95°  | 84   | 100   | 103  | 103   | 100  | 94   |
| 105° | 348  | 352   | 356  | 359   | 359  | 367  |
| 115° | 647  | 656   | 653  | 652   | 647  | 640  |
| 125° | 941  | 956   | 951  | 946   | 944  | 841  |
| 135° | 1217 | 1235  | 1239 | 1237  | 1232 | 941  |
| 145° | 1478 | 1489  | 1499 | 1500  | 1494 | 923  |
| 155° | 1690 | 1694  | 1700 | 1708  | 1702 | 778  |
| 165° | 1838 | 1836  | 1836 | 1848  | 1840 | 519  |
| 175° | 1913 | 1908  | 1905 | 1916  | 1906 | 182  |
| 180° | 1916 | 1916  | 1916 | 1916  | 1916 |      |



TEST NUMBER: P908938

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1252.1 | 1252.1 | 1252.1 | 1252.1 | 1252.1 |
| 2.5°   | 1257.8 | 1252.1 | 1239.6 | 1251.0 | 1248.8 |
| 5°     | 1252.1 | 1246.5 | 1231.7 | 1241.9 | 1238.5 |
| 7.5°   | 1241.9 | 1235.2 | 1219.3 | 1223.8 | 1218.1 |
| 10°    | 1228.3 | 1220.4 | 1197.8 | 1194.3 | 1187.6 |
| 12.5°  | 1211.3 | 1201.1 | 1170.5 | 1163.8 | 1151.2 |
| 15°    | 1190.9 | 1178.4 | 1139.9 | 1118.4 | 1107.1 |
| 17.5°  | 1167.1 | 1149.0 | 1101.4 | 1076.5 | 1058.3 |
| 20°    | 1139.9 | 1117.2 | 1060.6 | 1032.4 | 1007.3 |
| 22.5°  | 1110.5 | 1084.4 | 1018.7 | 980.2  | 963.2  |
| 25°    | 1081.1 | 1044.7 | 970.0  | 923.5  | 906.5  |
| 27.5°  | 1045.9 | 1007.3 | 924.6  | 871.4  | 845.3  |
| 30°    | 1008.6 | 965.4  | 874.7  | 817.1  | 786.4  |
| 32.5°  | 972.2  | 920.1  | 827.3  | 759.2  | 730.8  |
| 35°    | 931.5  | 873.6  | 774.0  | 702.6  | 677.6  |
| 37.5°  | 891.8  | 829.4  | 724.1  | 645.8  | 617.6  |
| 40°    | 849.9  | 781.9  | 672.0  | 591.5  | 562.1  |
| 42.5°  | 806.8  | 734.4  | 619.9  | 535.9  | 507.7  |
| 45°    | 761.5  | 685.5  | 566.6  | 486.0  | 458.9  |
| 47.5°  | 718.4  | 638.0  | 515.6  | 435.1  | 410.2  |
| 50°    | 670.9  | 590.4  | 465.7  | 387.5  | 363.8  |
| 52.5°  | 624.3  | 539.4  | 418.2  | 343.4  | 321.8  |
| 55°    | 579.0  | 490.6  | 368.2  | 300.3  | 278.8  |
| 57.5°  | 532.6  | 441.9  | 324.2  | 260.6  | 242.5  |
| 60°    | 484.9  | 394.4  | 277.6  | 219.8  | 201.8  |
| 62.5°  | 438.6  | 347.9  | 237.9  | 183.6  | 174.6  |
| 65°    | 390.9  | 299.1  | 197.1  | 158.6  | 155.2  |
| 67.5°  | 345.7  | 253.8  | 158.6  | 139.4  | 135.9  |
| 70°    | 298.0  | 209.6  | 131.4  | 120.1  | 115.5  |
| 72.5°  | 252.7  | 168.7  | 109.9  | 100.9  | 98.6   |
| 75°    | 208.4  | 129.2  | 90.7   | 82.7   | 81.6   |
| 77.5°  | 164.3  | 91.7   | 71.4   | 66.9   | 64.5   |
| 80°    | 123.5  | 65.7   | 54.3   | 49.9   | 49.9   |
| 82.5°  | 86.0   | 44.2   | 37.4   | 35.1   | 35.1   |
| 85°    | 48.7   | 24.8   | 21.5   | 21.5   | 21.5   |
| 87.5°  | 18.2   | 9.0    | 9.0    | 8.0    | 8.0    |
| 90°    | 1.7    | 20.8   | 56.7   | 53.1   | 54.8   |
| 92.5°  | 35.9   | 48.6   | 50.3   | 52.0   | 52.0   |
| 95°    | 84.3   | 100.5  | 103.4  | 103.4  | 100.5  |
| 97.5°  | 140.4  | 155.4  | 161.8  | 161.8  | 161.8  |
| 100°   | 205.1  | 218.3  | 223.0  | 223.0  | 221.3  |
| 102.5° | 273.3  | 283.1  | 289.4  | 291.1  | 289.4  |
| 105°   | 347.8  | 352.4  | 355.9  | 358.8  | 358.8  |
| 107.5° | 421.7  | 428.7  | 428.7  | 429.8  | 421.7  |
| 110°   | 493.4  | 502.6  | 502.6  | 502.6  | 498.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 570.8  | 580.6  | 578.9  | 574.2  | 570.8  |
| 115°   | 647.0  | 656.3  | 653.4  | 651.7  | 647.0  |
| 117.5° | 722.8  | 735.5  | 727.3  | 722.8  | 718.1  |
| 120°   | 799.0  | 811.7  | 799.0  | 799.0  | 793.8  |
| 122.5° | 868.3  | 884.4  | 876.4  | 871.8  | 868.3  |
| 125°   | 941.1  | 955.5  | 950.9  | 945.7  | 944.0  |
| 127.5° | 1012.2 | 1030.1 | 1023.7 | 1016.8 | 1012.2 |
| 130°   | 1078.6 | 1099.4 | 1096.5 | 1093.1 | 1086.7 |
| 132.5° | 1153.2 | 1169.3 | 1170.4 | 1162.4 | 1157.7 |
| 135°   | 1217.3 | 1235.2 | 1238.6 | 1236.9 | 1232.2 |
| 137.5° | 1288.9 | 1303.3 | 1306.3 | 1305.0 | 1298.2 |
| 140°   | 1351.9 | 1366.3 | 1374.4 | 1374.4 | 1368.1 |
| 142.5° | 1416.5 | 1431.0 | 1435.6 | 1437.3 | 1431.0 |
| 145°   | 1477.8 | 1489.3 | 1498.6 | 1500.4 | 1494.0 |
| 147.5° | 1532.7 | 1547.1 | 1554.1 | 1556.9 | 1550.5 |
| 150°   | 1589.3 | 1599.1 | 1605.5 | 1610.6 | 1605.5 |
| 152.5° | 1639.5 | 1649.4 | 1657.5 | 1663.9 | 1657.5 |
| 155°   | 1689.8 | 1694.5 | 1699.6 | 1707.8 | 1702.5 |
| 157.5° | 1733.1 | 1736.7 | 1739.5 | 1751.1 | 1743.0 |
| 160°   | 1771.9 | 1775.3 | 1777.1 | 1786.9 | 1780.0 |
| 162.5° | 1807.7 | 1807.7 | 1809.4 | 1820.4 | 1812.3 |
| 165°   | 1838.3 | 1836.5 | 1836.5 | 1848.2 | 1840.1 |
| 167.5° | 1866.0 | 1860.9 | 1860.9 | 1872.4 | 1864.3 |
| 170°   | 1886.8 | 1882.2 | 1880.5 | 1892.0 | 1882.2 |
| 172.5° | 1901.3 | 1896.6 | 1894.9 | 1906.4 | 1896.6 |
| 175°   | 1912.8 | 1908.2 | 1904.7 | 1916.3 | 1906.4 |
| 177.5° | 1919.1 | 1914.6 | 1911.1 | 1920.9 | 1911.1 |
| 180°   | 1916.3 | 1916.3 | 1916.3 | 1916.3 | 1916.3 |



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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 | 8.65             | 9.35  | 9.75  | 10.45 | 11.95 | 4.61           | 5.31 | 5.71 | 6.41 | 7.91  |
|                 | 3H   | 10.30            | 10.93 | 11.41 | 12.03 | 13.55 | 5.77           | 6.40 | 6.88 | 7.50 | 9.02  |
|                 | 4H   | 10.89            | 11.49 | 12.01 | 12.59 | 14.11 | 6.20           | 6.80 | 7.32 | 7.90 | 9.43  |
|                 | 6H   | 11.29            | 11.84 | 12.41 | 12.94 | 14.48 | 6.50           | 7.05 | 7.63 | 8.16 | 9.69  |
|                 | 8H   | 11.40            | 11.92 | 12.53 | 13.04 | 14.57 | 6.58           | 7.10 | 7.71 | 8.22 | 9.75  |
|                 | 12H  | 11.45            | 11.95 | 12.58 | 13.06 | 14.61 | 6.61           | 7.11 | 7.74 | 8.22 | 9.77  |
| 4H              | 2H   | 8.65             | 9.25  | 9.77  | 10.35 | 11.87 | 5.18           | 5.78 | 6.30 | 6.88 | 8.40  |
|                 | 3H   | 10.44            | 10.94 | 11.57 | 12.07 | 13.61 | 6.50           | 6.99 | 7.63 | 8.12 | 9.66  |
|                 | 4H   | 11.11            | 11.57 | 12.25 | 12.69 | 14.25 | 7.02           | 7.48 | 8.16 | 8.60 | 10.16 |
|                 | 6H   | 11.60            | 11.99 | 12.74 | 13.14 | 14.69 | 7.42           | 7.81 | 8.56 | 8.95 | 10.50 |
|                 | 8H   | 11.77            | 12.13 | 12.91 | 13.26 | 14.83 | 7.53           | 7.90 | 8.67 | 9.03 | 10.60 |
|                 | 12H  | 11.84            | 12.17 | 13.00 | 13.32 | 14.89 | 7.58           | 7.91 | 8.74 | 9.06 | 10.63 |
| 8H              | 4H   | 11.07            | 11.43 | 12.21 | 12.57 | 14.13 | 7.28           | 7.65 | 8.42 | 8.78 | 10.35 |
|                 | 6H   | 11.61            | 11.91 | 12.77 | 13.08 | 14.65 | 7.77           | 8.07 | 8.93 | 9.25 | 10.81 |
|                 | 8H   | 11.81            | 12.07 | 12.98 | 13.23 | 14.81 | 7.95           | 8.21 | 9.12 | 9.37 | 10.95 |
|                 | 12H  | 11.93            | 12.16 | 13.10 | 13.31 | 14.93 | 8.05           | 8.28 | 9.22 | 9.43 | 11.05 |
| 12H             | 4H   | 11.01            | 11.34 | 12.17 | 12.49 | 14.06 | 7.28           | 7.61 | 8.44 | 8.75 | 10.33 |
|                 | 6H   | 11.58            | 11.84 | 12.75 | 13.00 | 14.58 | 7.82           | 8.08 | 8.98 | 9.23 | 10.82 |
|                 | 8H   | 11.78            | 12.01 | 12.95 | 13.16 | 14.78 | 8.00           | 8.24 | 9.17 | 9.39 | 11.00 |