

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: P907102

Luminaire Tested: DFN2DIP-TR3F0-030D060US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907102  
REPORT IS A COMBINATION OF REPORTS P900314 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-030D060US835-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

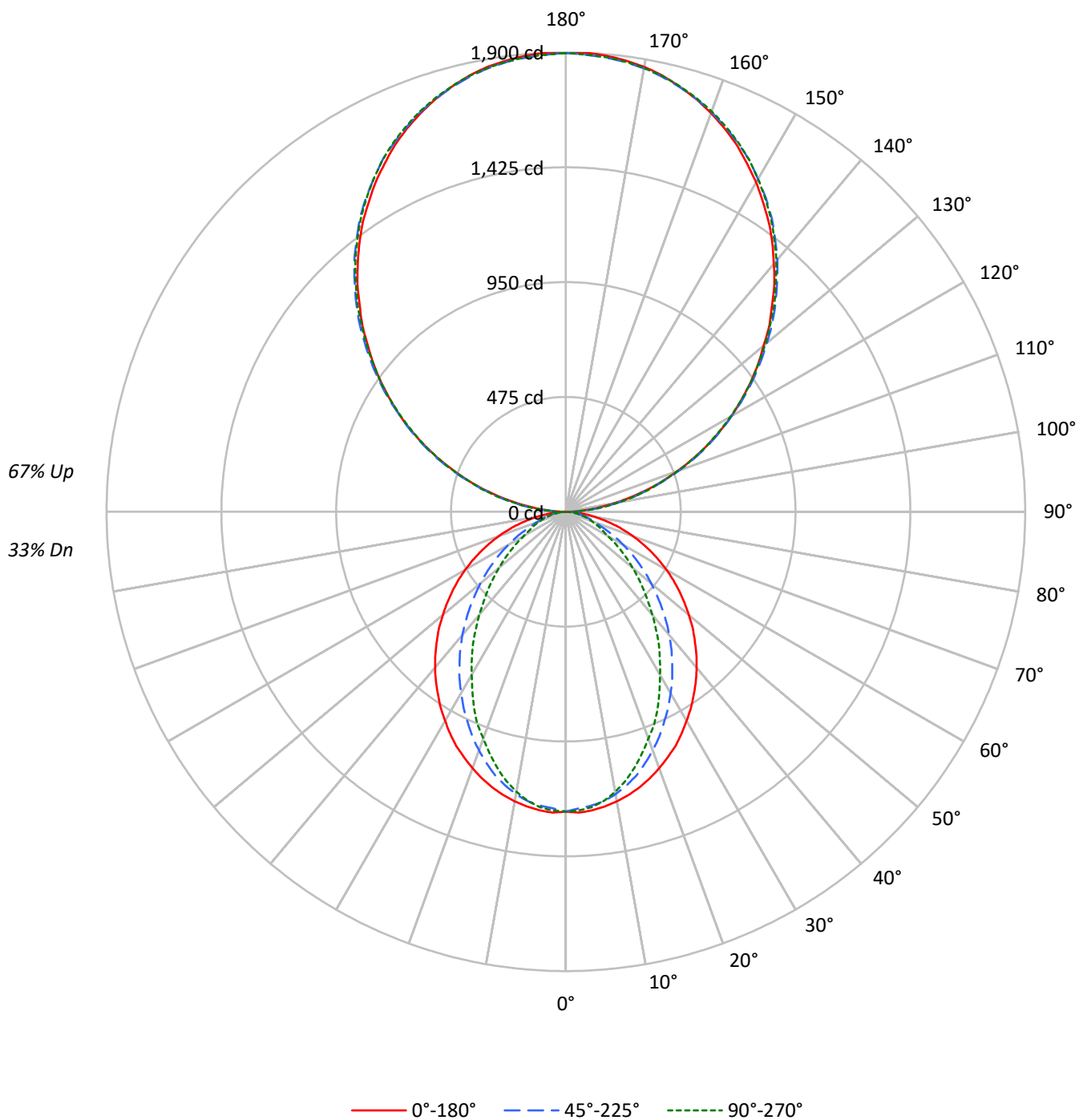
Lumens per Lamp: N/A  
Luminaire Lumens: 7860.0 lumens  
Efficiency: N/A  
Efficacy: 113.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 69.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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   | 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°  | 1545 | 1545 | 1545 |
| 5°  | 1547 | 1519 | 1529 |
| 10° | 1530 | 1488 | 1478 |
| 15° | 1509 | 1438 | 1401 |
| 20° | 1480 | 1369 | 1305 |
| 25° | 1450 | 1292 | 1213 |
| 30° | 1411 | 1213 | 1097 |
| 35° | 1373 | 1128 | 995  |
| 40° | 1334 | 1040 | 878  |
| 45° | 1288 | 943  | 773  |
| 50° | 1241 | 845  | 669  |
| 55° | 1192 | 741  | 570  |
| 60° | 1135 | 632  | 468  |
| 65° | 1069 | 522  | 420  |
| 70° | 989  | 419  | 379  |
| 75° | 889  | 366  | 342  |
| 80° | 744  | 303  | 294  |
| 85° | 506  | 196  | 215  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1851 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.2  | 1.5       |
| 10°-20°   | 319.0  | 4.1       |
| 20°-30°   | 447.9  | 5.7       |
| 30°-40°   | 488.2  | 6.2       |
| 40°-50°   | 448.7  | 5.7       |
| 50°-60°   | 352.4  | 4.5       |
| 60°-70°   | 229.4  | 2.9       |
| 70°-80°   | 118.1  | 1.5       |
| 80°-90°   | 35.5   | 0.5       |
| 90°-100°  | 117.4  | 1.5       |
| 100°-110° | 373.1  | 4.7       |
| 110°-120° | 638.5  | 8.1       |
| 120°-130° | 839.7  | 10.7      |
| 130°-140° | 942.5  | 12.0      |
| 140°-150° | 924.2  | 11.8      |
| 150°-160° | 775.3  | 9.9       |
| 160°-170° | 514.2  | 6.5       |
| 170°-180° | 179.7  | 2.3       |
| 0°-30°    | 883.1  | 11.2      |
| 0°-40°    | 1371.3 | 17.4      |
| 0°-60°    | 2172.4 | 27.6      |
| 0°-90°    | 2555.4 | 32.5      |
| 90°-120°  | 1129.0 | 14.4      |
| 90°-150°  | 3835.4 | 48.8      |
| 90°-180°  | 5305.0 | 67.5      |
| 0°-180°   | 7860.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1240 | 1240  | 1240 | 1240  | 1240 |      |
| 5°   | 1240 | 1234  | 1220 | 1230  | 1226 | 118  |
| 15°  | 1179 | 1167  | 1129 | 1108  | 1096 | 332  |
| 25°  | 1070 | 1034  | 960  | 914   | 898  | 492  |
| 35°  | 922  | 865   | 766  | 696   | 671  | 577  |
| 45°  | 754  | 679   | 561  | 481   | 454  | 582  |
| 55°  | 573  | 486   | 365  | 297   | 276  | 512  |
| 65°  | 387  | 296   | 195  | 157   | 154  | 384  |
| 75°  | 206  | 128   | 90   | 82    | 81   | 218  |
| 85°  | 48   | 25    | 21   | 21    | 21   | 55   |
| 90°  | 2    | 21    | 56   | 53    | 54   | 8    |
| 95°  | 84   | 100   | 102  | 102   | 100  | 93   |
| 105° | 344  | 349   | 352  | 355   | 355  | 363  |
| 115° | 641  | 650   | 647  | 645   | 641  | 634  |
| 125° | 932  | 946   | 942  | 936   | 935  | 833  |
| 135° | 1205 | 1223  | 1226 | 1225  | 1220 | 932  |
| 145° | 1463 | 1475  | 1484 | 1486  | 1479 | 914  |
| 155° | 1673 | 1678  | 1683 | 1691  | 1686 | 770  |
| 165° | 1820 | 1819  | 1819 | 1830  | 1822 | 514  |
| 175° | 1894 | 1890  | 1886 | 1898  | 1888 | 180  |
| 180° | 1898 | 1898  | 1898 | 1898  | 1898 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1239.9 | 1239.9 | 1239.9 | 1239.9 | 1239.9 |
| 2.5°   | 1245.5 | 1239.9 | 1227.5 | 1238.8 | 1236.6 |
| 5°     | 1239.9 | 1234.3 | 1219.7 | 1229.8 | 1226.4 |
| 7.5°   | 1229.8 | 1223.1 | 1207.4 | 1211.8 | 1206.2 |
| 10°    | 1216.3 | 1208.5 | 1186.1 | 1182.6 | 1176.0 |
| 12.5°  | 1199.5 | 1189.4 | 1159.1 | 1152.4 | 1140.0 |
| 15°    | 1179.3 | 1166.9 | 1128.8 | 1107.5 | 1096.3 |
| 17.5°  | 1155.7 | 1137.8 | 1090.6 | 1066.0 | 1048.0 |
| 20°    | 1128.8 | 1106.3 | 1050.2 | 1022.3 | 997.5  |
| 22.5°  | 1099.7 | 1073.8 | 1008.7 | 970.6  | 953.8  |
| 25°    | 1070.5 | 1034.5 | 960.5  | 914.5  | 897.6  |
| 27.5°  | 1035.7 | 997.5  | 915.6  | 862.9  | 837.0  |
| 30°    | 998.7  | 956.0  | 866.2  | 809.1  | 778.7  |
| 32.5°  | 962.7  | 911.1  | 819.2  | 751.8  | 723.7  |
| 35°    | 922.4  | 865.1  | 766.4  | 695.7  | 671.0  |
| 37.5°  | 883.1  | 821.3  | 717.0  | 639.5  | 611.6  |
| 40°    | 841.6  | 774.3  | 665.4  | 585.7  | 556.6  |
| 42.5°  | 798.9  | 727.2  | 613.8  | 530.7  | 502.7  |
| 45°    | 754.1  | 678.8  | 561.1  | 481.3  | 454.4  |
| 47.5°  | 711.4  | 631.8  | 510.6  | 430.8  | 406.2  |
| 50°    | 664.3  | 584.6  | 461.2  | 383.7  | 360.2  |
| 52.5°  | 618.2  | 534.1  | 414.1  | 340.0  | 318.7  |
| 55°    | 573.3  | 485.8  | 364.6  | 297.4  | 276.1  |
| 57.5°  | 527.4  | 437.6  | 321.0  | 258.1  | 240.1  |
| 60°    | 480.2  | 390.5  | 274.9  | 217.7  | 199.8  |
| 62.5°  | 434.3  | 344.5  | 235.6  | 181.8  | 172.9  |
| 65°    | 387.1  | 296.2  | 195.2  | 157.1  | 153.7  |
| 67.5°  | 342.3  | 251.3  | 157.1  | 138.0  | 134.6  |
| 70°    | 295.1  | 207.6  | 130.1  | 118.9  | 114.4  |
| 72.5°  | 250.2  | 167.1  | 108.8  | 99.9   | 97.6   |
| 75°    | 206.4  | 127.9  | 89.8   | 81.9   | 80.8   |
| 77.5°  | 162.7  | 90.8   | 70.7   | 66.2   | 63.9   |
| 80°    | 122.3  | 65.1   | 53.8   | 49.4   | 49.4   |
| 82.5°  | 85.2   | 43.8   | 37.0   | 34.8   | 34.8   |
| 85°    | 48.2   | 24.6   | 21.3   | 21.3   | 21.3   |
| 87.5°  | 18.0   | 8.9    | 8.9    | 7.9    | 7.9    |
| 90°    | 1.7    | 20.6   | 56.1   | 52.6   | 54.3   |
| 92.5°  | 35.5   | 48.1   | 49.8   | 51.5   | 51.5   |
| 95°    | 83.5   | 99.5   | 102.4  | 102.4  | 99.5   |
| 97.5°  | 139.0  | 153.9  | 160.2  | 160.2  | 160.2  |
| 100°   | 203.1  | 216.2  | 220.8  | 220.8  | 219.1  |
| 102.5° | 270.6  | 280.3  | 286.6  | 288.3  | 286.6  |
| 105°   | 344.4  | 349.0  | 352.4  | 355.3  | 355.3  |
| 107.5° | 417.6  | 424.5  | 424.5  | 425.6  | 417.6  |
| 110°   | 488.6  | 497.7  | 497.7  | 497.7  | 493.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 565.2  | 574.9  | 573.2  | 568.6  | 565.2  |
| 115°   | 640.7  | 649.9  | 647.0  | 645.3  | 640.7  |
| 117.5° | 715.7  | 728.3  | 720.2  | 715.7  | 711.1  |
| 120°   | 791.2  | 803.8  | 791.2  | 791.2  | 786.0  |
| 122.5° | 859.8  | 875.8  | 867.8  | 863.3  | 859.8  |
| 125°   | 931.9  | 946.2  | 941.6  | 936.5  | 934.8  |
| 127.5° | 1002.3 | 1020.0 | 1013.7 | 1006.9 | 1002.3 |
| 130°   | 1068.1 | 1088.7 | 1085.8 | 1082.4 | 1076.1 |
| 132.5° | 1141.9 | 1157.9 | 1159.0 | 1151.0 | 1146.4 |
| 135°   | 1205.4 | 1223.1 | 1226.5 | 1224.8 | 1220.2 |
| 137.5° | 1276.3 | 1290.6 | 1293.5 | 1292.3 | 1285.5 |
| 140°   | 1338.7 | 1353.0 | 1361.0 | 1361.0 | 1354.7 |
| 142.5° | 1402.7 | 1417.0 | 1421.6 | 1423.3 | 1417.0 |
| 145°   | 1463.4 | 1474.8 | 1484.0 | 1485.7 | 1479.4 |
| 147.5° | 1517.7 | 1532.0 | 1538.9 | 1541.7 | 1535.4 |
| 150°   | 1573.8 | 1583.5 | 1589.8 | 1594.9 | 1589.8 |
| 152.5° | 1623.5 | 1633.3 | 1641.3 | 1647.6 | 1641.3 |
| 155°   | 1673.3 | 1677.9 | 1683.0 | 1691.1 | 1685.9 |
| 157.5° | 1716.2 | 1719.7 | 1722.5 | 1734.0 | 1726.0 |
| 160°   | 1754.6 | 1758.0 | 1759.7 | 1769.4 | 1762.6 |
| 162.5° | 1790.0 | 1790.0 | 1791.7 | 1802.6 | 1794.6 |
| 165°   | 1820.3 | 1818.6 | 1818.6 | 1830.1 | 1822.1 |
| 167.5° | 1847.8 | 1842.7 | 1842.7 | 1854.1 | 1846.1 |
| 170°   | 1868.4 | 1863.8 | 1862.1 | 1873.5 | 1863.8 |
| 172.5° | 1882.7 | 1878.1 | 1876.4 | 1887.8 | 1878.1 |
| 175°   | 1894.1 | 1889.6 | 1886.1 | 1897.6 | 1887.8 |
| 177.5° | 1900.4 | 1895.9 | 1892.4 | 1902.1 | 1892.4 |
| 180°   | 1897.6 | 1897.6 | 1897.6 | 1897.6 | 1897.6 |

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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 | 6.71             | 7.41  | 7.80  | 8.50  | 10.01 | 2.68           | 3.39 | 3.78 | 4.48 | 5.98 |
|                 | 3H   | 8.36             | 8.99  | 9.47  | 10.10 | 11.62 | 3.86           | 4.49 | 4.96 | 5.59 | 7.11 |
|                 | 4H   | 8.96             | 9.56  | 10.08 | 10.66 | 12.19 | 4.30           | 4.89 | 5.41 | 6.00 | 7.52 |
|                 | 6H   | 9.37             | 9.92  | 10.49 | 11.02 | 12.56 | 4.61           | 5.16 | 5.73 | 6.26 | 7.80 |
|                 | 8H   | 9.49             | 10.01 | 10.62 | 11.13 | 12.66 | 4.69           | 5.21 | 5.82 | 6.33 | 7.86 |
|                 | 12H  | 9.54             | 10.04 | 10.67 | 11.15 | 12.70 | 4.73           | 5.22 | 5.86 | 6.34 | 7.89 |
| 4H              | 2H   | 6.71             | 7.30  | 7.83  | 8.41  | 9.93  | 3.26           | 3.85 | 4.38 | 4.96 | 6.48 |
|                 | 3H   | 8.51             | 9.01  | 9.64  | 10.14 | 11.68 | 4.59           | 5.09 | 5.72 | 6.22 | 7.75 |
|                 | 4H   | 9.19             | 9.65  | 10.33 | 10.77 | 12.33 | 5.13           | 5.58 | 6.26 | 6.70 | 8.26 |
|                 | 6H   | 9.69             | 10.08 | 10.83 | 11.23 | 12.78 | 5.53           | 5.92 | 6.67 | 7.07 | 8.62 |
|                 | 8H   | 9.86             | 10.23 | 11.00 | 11.36 | 12.92 | 5.66           | 6.02 | 6.80 | 7.15 | 8.72 |
|                 | 12H  | 9.94             | 10.28 | 11.10 | 11.42 | 12.99 | 5.71           | 6.04 | 6.87 | 7.19 | 8.76 |
| 8H              | 4H   | 9.15             | 9.52  | 10.29 | 10.65 | 12.21 | 5.39           | 5.76 | 6.53 | 6.89 | 8.46 |
|                 | 6H   | 9.70             | 10.00 | 10.86 | 11.18 | 12.74 | 5.90           | 6.20 | 7.06 | 7.37 | 8.94 |
|                 | 8H   | 9.91             | 10.17 | 11.08 | 11.33 | 12.91 | 6.08           | 6.35 | 7.25 | 7.50 | 9.08 |
|                 | 12H  | 10.04            | 10.27 | 11.21 | 11.42 | 13.04 | 6.19           | 6.42 | 7.36 | 7.58 | 9.19 |
| 12H             | 4H   | 9.10             | 9.43  | 10.25 | 10.57 | 12.14 | 5.39           | 5.72 | 6.55 | 6.87 | 8.44 |
|                 | 6H   | 9.68             | 9.94  | 10.84 | 11.09 | 12.68 | 5.94           | 6.21 | 7.11 | 7.36 | 8.94 |
|                 | 8H   | 9.88             | 10.12 | 11.05 | 11.27 | 12.88 | 6.14           | 6.38 | 7.31 | 7.53 | 9.14 |