

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: P913468

Luminaire Tested: DFN2DIP-HX3F0-040D060US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913468  
REPORT IS A COMBINATION OF REPORTS P899246 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-040D060US927-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

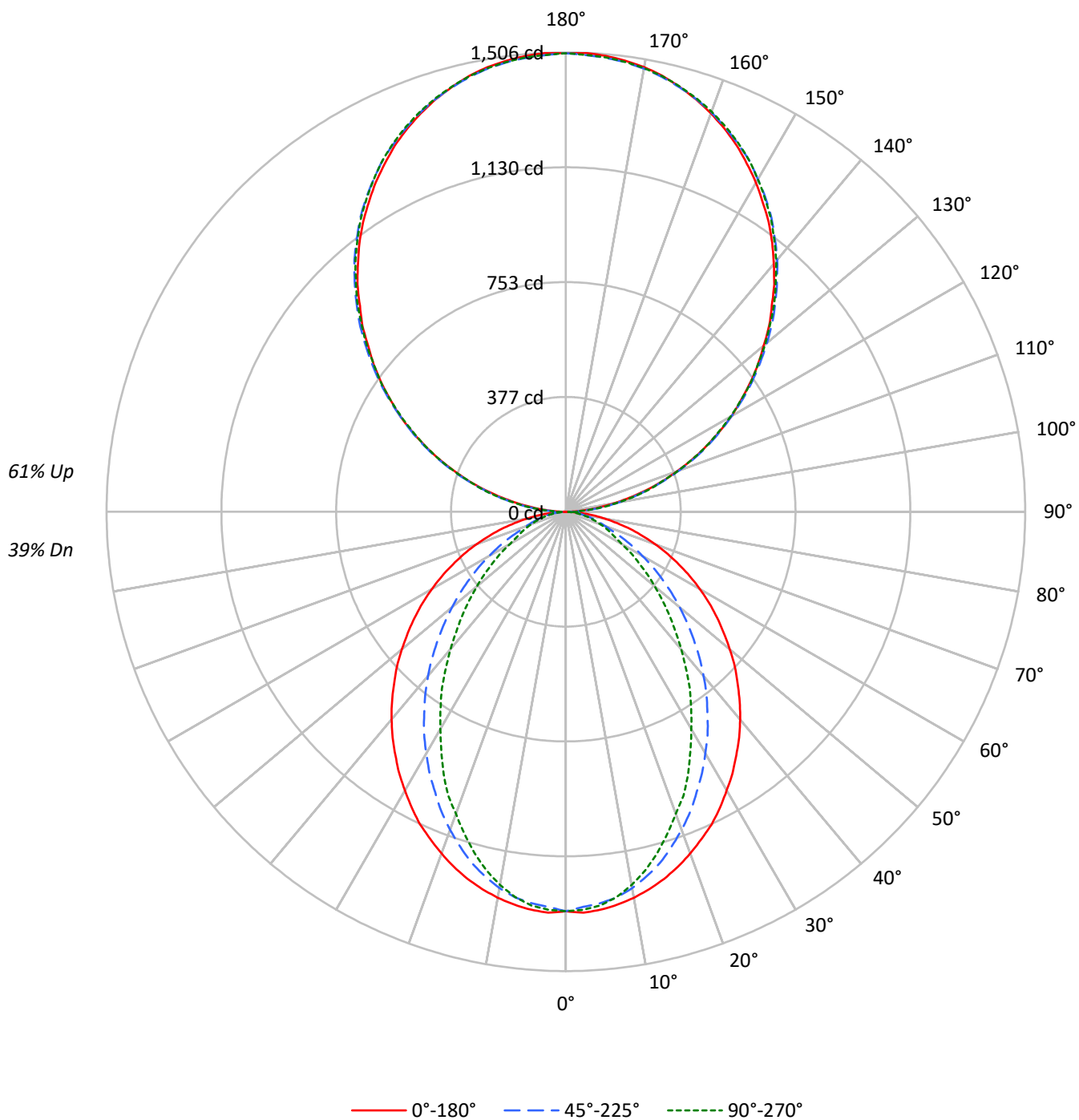
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6899.9 lumens  
Efficiency: N/A  
Efficacy: 86.5 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: Semi-Indirect  
  
Input Watts (W): 79.8  
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



TEST NUMBER: P913468

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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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 92  | 88  | 85  | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 40 | 40 |
| 2   | 87  | 80  | 75  | 70  | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 66 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 |
| 5   | 67  | 56  | 48  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 24 | 22 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 33 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 22 | 20 | 18 |
| 8   | 53  | 41  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1517 | 1517 | 1517 |
| 5°  | 1519 | 1492 | 1502 |
| 10° | 1503 | 1462 | 1452 |
| 15° | 1482 | 1412 | 1376 |
| 20° | 1454 | 1345 | 1282 |
| 25° | 1425 | 1269 | 1192 |
| 30° | 1387 | 1192 | 1078 |
| 35° | 1349 | 1109 | 978  |
| 40° | 1311 | 1023 | 863  |
| 45° | 1266 | 928  | 760  |
| 50° | 1220 | 832  | 658  |
| 55° | 1172 | 729  | 561  |
| 60° | 1116 | 622  | 461  |
| 65° | 1052 | 514  | 414  |
| 70° | 974  | 413  | 373  |
| 75° | 876  | 362  | 338  |
| 80° | 734  | 300  | 290  |
| 85° | 502  | 195  | 213  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1413 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 122.7  | 1.8       |
| 10°-20°   | 336.9  | 4.9       |
| 20°-30°   | 473.1  | 6.9       |
| 30°-40°   | 515.7  | 7.5       |
| 40°-50°   | 473.9  | 6.9       |
| 50°-60°   | 372.2  | 5.4       |
| 60°-70°   | 242.3  | 3.5       |
| 70°-80°   | 124.7  | 1.8       |
| 80°-90°   | 36.1   | 0.5       |
| 90°-100°  | 93.0   | 1.3       |
| 100°-110° | 295.6  | 4.3       |
| 110°-120° | 505.8  | 7.3       |
| 120°-130° | 665.2  | 9.6       |
| 130°-140° | 746.6  | 10.8      |
| 140°-150° | 732.2  | 10.6      |
| 150°-160° | 614.2  | 8.9       |
| 160°-170° | 407.3  | 5.9       |
| 170°-180° | 142.4  | 2.1       |
| 0°-30°    | 932.7  | 13.5      |
| 0°-40°    | 1448.4 | 21.0      |
| 0°-60°    | 2294.6 | 33.3      |
| 0°-90°    | 2697.7 | 39.1      |
| 90°-120°  | 894.4  | 13.0      |
| 90°-150°  | 3038.4 | 44.0      |
| 90°-180°  | 4202.0 | 60.9      |
| 0°-180°   | 6899.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1310 | 1310  | 1310 | 1310  | 1310 |      |
| 5°   | 1310 | 1304  | 1288 | 1299  | 1296 | 124  |
| 15°  | 1246 | 1233  | 1192 | 1170  | 1158 | 351  |
| 25°  | 1131 | 1093  | 1014 | 966   | 948  | 520  |
| 35°  | 974  | 914   | 810  | 735   | 709  | 610  |
| 45°  | 796  | 717   | 593  | 508   | 480  | 615  |
| 55°  | 606  | 513   | 385  | 314   | 292  | 541  |
| 65°  | 409  | 313   | 206  | 166   | 162  | 405  |
| 75°  | 218  | 135   | 95   | 86    | 85   | 231  |
| 85°  | 51   | 26    | 22   | 22    | 22   | 58   |
| 90°  | 1    | 16    | 44   | 42    | 43   | 7    |
| 95°  | 66   | 79    | 81   | 81    | 79   | 74   |
| 105° | 273  | 276   | 279  | 282   | 282  | 288  |
| 115° | 508  | 515   | 512  | 511   | 508  | 502  |
| 125° | 738  | 750   | 746  | 742   | 740  | 660  |
| 135° | 955  | 969   | 972  | 970   | 967  | 738  |
| 145° | 1159 | 1168  | 1176 | 1177  | 1172 | 724  |
| 155° | 1326 | 1329  | 1333 | 1340  | 1336 | 610  |
| 165° | 1442 | 1441  | 1441 | 1450  | 1443 | 407  |
| 175° | 1500 | 1497  | 1494 | 1503  | 1496 | 143  |
| 180° | 1503 | 1503  | 1503 | 1503  | 1503 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1309.6 | 1309.6 | 1309.6 | 1309.6 | 1309.6 |
| 2.5°   | 1315.6 | 1309.6 | 1296.6 | 1308.5 | 1306.1 |
| 5°     | 1309.6 | 1303.7 | 1288.2 | 1298.9 | 1295.5 |
| 7.5°   | 1298.9 | 1291.9 | 1275.3 | 1279.9 | 1274.1 |
| 10°    | 1284.8 | 1276.4 | 1252.8 | 1249.1 | 1242.1 |
| 12.5°  | 1267.0 | 1256.3 | 1224.2 | 1217.2 | 1204.1 |
| 15°    | 1245.6 | 1232.6 | 1192.3 | 1169.8 | 1158.0 |
| 17.5°  | 1220.8 | 1201.7 | 1151.9 | 1125.9 | 1106.9 |
| 20°    | 1192.3 | 1168.5 | 1109.3 | 1079.7 | 1053.6 |
| 22.5°  | 1161.5 | 1134.2 | 1065.4 | 1025.2 | 1007.5 |
| 25°    | 1130.7 | 1092.7 | 1014.5 | 966.0  | 948.1  |
| 27.5°  | 1094.0 | 1053.6 | 967.1  | 911.4  | 884.1  |
| 30°    | 1054.9 | 1009.7 | 914.9  | 854.5  | 822.5  |
| 32.5°  | 1016.9 | 962.3  | 865.2  | 794.1  | 764.4  |
| 35°    | 974.3  | 913.8  | 809.5  | 734.8  | 708.7  |
| 37.5°  | 932.8  | 867.5  | 757.3  | 675.5  | 645.9  |
| 40°    | 888.9  | 817.8  | 702.8  | 618.7  | 587.9  |
| 42.5°  | 843.8  | 768.0  | 648.3  | 560.5  | 531.0  |
| 45°    | 796.5  | 717.0  | 592.6  | 508.4  | 480.0  |
| 47.5°  | 751.5  | 667.3  | 539.3  | 455.1  | 429.0  |
| 50°    | 701.6  | 617.5  | 487.1  | 405.3  | 380.5  |
| 52.5°  | 653.0  | 564.1  | 437.4  | 359.1  | 336.6  |
| 55°    | 605.6  | 513.2  | 385.2  | 314.1  | 291.6  |
| 57.5°  | 557.1  | 462.2  | 339.0  | 272.6  | 253.7  |
| 60°    | 507.2  | 412.4  | 290.3  | 230.0  | 211.0  |
| 62.5°  | 458.8  | 363.9  | 248.8  | 192.0  | 182.6  |
| 65°    | 408.9  | 312.8  | 206.2  | 166.0  | 162.3  |
| 67.5°  | 361.6  | 265.5  | 166.0  | 145.8  | 142.2  |
| 70°    | 311.7  | 219.3  | 137.4  | 125.6  | 120.8  |
| 72.5°  | 264.4  | 176.6  | 114.9  | 105.5  | 103.1  |
| 75°    | 218.0  | 135.1  | 94.8   | 86.5   | 85.4   |
| 77.5°  | 171.9  | 95.9   | 74.7   | 69.9   | 67.5   |
| 80°    | 129.1  | 68.8   | 56.8   | 52.2   | 52.2   |
| 82.5°  | 90.1   | 46.3   | 39.1   | 36.7   | 36.7   |
| 85°    | 50.9   | 26.1   | 22.5   | 22.5   | 22.5   |
| 87.5°  | 19.0   | 9.4    | 9.4    | 8.3    | 8.3    |
| 90°    | 1.3    | 16.3   | 44.4   | 41.7   | 43.0   |
| 92.5°  | 28.1   | 38.1   | 39.5   | 40.8   | 40.8   |
| 95°    | 66.1   | 78.8   | 81.1   | 81.1   | 78.8   |
| 97.5°  | 110.1  | 121.9  | 126.9  | 126.9  | 126.9  |
| 100°   | 160.9  | 171.3  | 174.9  | 174.9  | 173.6  |
| 102.5° | 214.4  | 222.0  | 227.0  | 228.4  | 227.0  |
| 105°   | 272.8  | 276.5  | 279.2  | 281.5  | 281.5  |
| 107.5° | 330.8  | 336.3  | 336.3  | 337.2  | 330.8  |
| 110°   | 387.1  | 394.3  | 394.3  | 394.3  | 390.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 447.7  | 455.4  | 454.1  | 450.4  | 447.7  |
| 115°   | 507.6  | 514.8  | 512.5  | 511.2  | 507.6  |
| 117.5° | 567.0  | 576.9  | 570.5  | 567.0  | 563.3  |
| 120°   | 626.8  | 636.8  | 626.8  | 626.8  | 622.7  |
| 122.5° | 681.1  | 693.8  | 687.5  | 683.9  | 681.1  |
| 125°   | 738.2  | 749.6  | 745.9  | 741.9  | 740.5  |
| 127.5° | 794.0  | 808.0  | 803.0  | 797.6  | 794.0  |
| 130°   | 846.1  | 862.4  | 860.2  | 857.5  | 852.5  |
| 132.5° | 904.6  | 917.3  | 918.1  | 911.8  | 908.2  |
| 135°   | 954.9  | 968.9  | 971.6  | 970.3  | 966.6  |
| 137.5° | 1011.1 | 1022.4 | 1024.7 | 1023.7 | 1018.3 |
| 140°   | 1060.5 | 1071.8 | 1078.2 | 1078.2 | 1073.2 |
| 142.5° | 1111.2 | 1122.5 | 1126.2 | 1127.5 | 1122.5 |
| 145°   | 1159.3 | 1168.3 | 1175.6 | 1176.9 | 1172.0 |
| 147.5° | 1202.3 | 1213.6 | 1219.1 | 1221.3 | 1216.3 |
| 150°   | 1246.7 | 1254.4 | 1259.4 | 1263.4 | 1259.4 |
| 152.5° | 1286.1 | 1293.9 | 1300.2 | 1305.2 | 1300.2 |
| 155°   | 1325.6 | 1329.2 | 1333.2 | 1339.7 | 1335.5 |
| 157.5° | 1359.5 | 1362.3 | 1364.5 | 1373.6 | 1367.3 |
| 160°   | 1390.0 | 1392.7 | 1394.0 | 1401.7 | 1396.3 |
| 162.5° | 1418.0 | 1418.0 | 1419.4 | 1428.0 | 1421.6 |
| 165°   | 1442.0 | 1440.7 | 1440.7 | 1449.8 | 1443.4 |
| 167.5° | 1463.8 | 1459.8 | 1459.8 | 1468.8 | 1462.4 |
| 170°   | 1480.1 | 1476.5 | 1475.1 | 1484.2 | 1476.5 |
| 172.5° | 1491.4 | 1487.8 | 1486.4 | 1495.5 | 1487.8 |
| 175°   | 1500.5 | 1496.9 | 1494.1 | 1503.2 | 1495.5 |
| 177.5° | 1505.5 | 1501.9 | 1499.1 | 1506.8 | 1499.1 |
| 180°   | 1503.2 | 1503.2 | 1503.2 | 1503.2 | 1503.2 |

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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 | 7.44             | 8.19  | 8.49  | 9.24  | 10.66 | 3.41           | 4.16 | 4.47 | 5.21 | 6.64 |
|                 | 3H   | 9.10             | 9.77  | 10.16 | 10.83 | 12.27 | 4.59           | 5.26 | 5.65 | 6.32 | 7.76 |
|                 | 4H   | 9.70             | 10.34 | 10.77 | 11.40 | 12.85 | 5.04           | 5.67 | 6.11 | 6.73 | 8.18 |
|                 | 6H   | 10.11            | 10.70 | 11.19 | 11.76 | 13.22 | 5.35           | 5.93 | 6.43 | 7.00 | 8.46 |
|                 | 8H   | 10.23            | 10.79 | 11.32 | 11.87 | 13.32 | 5.44           | 5.99 | 6.52 | 7.07 | 8.52 |
|                 | 12H  | 10.29            | 10.82 | 11.38 | 11.89 | 13.37 | 5.47           | 6.00 | 6.56 | 7.08 | 8.55 |
| 4H              | 2H   | 7.44             | 8.08  | 8.52  | 9.14  | 10.59 | 4.00           | 4.63 | 5.07 | 5.69 | 7.14 |
|                 | 3H   | 9.26             | 9.79  | 10.34 | 10.88 | 12.34 | 5.33           | 5.86 | 6.42 | 6.95 | 8.41 |
|                 | 4H   | 9.94             | 10.43 | 11.03 | 11.51 | 12.99 | 5.87           | 6.36 | 6.96 | 7.44 | 8.92 |
|                 | 6H   | 10.44            | 10.86 | 11.54 | 11.96 | 13.44 | 6.28           | 6.70 | 7.38 | 7.80 | 9.28 |
|                 | 8H   | 10.61            | 11.00 | 11.71 | 12.10 | 13.59 | 6.41           | 6.80 | 7.51 | 7.89 | 9.38 |
|                 | 12H  | 10.70            | 11.05 | 11.82 | 12.16 | 13.65 | 6.47           | 6.82 | 7.58 | 7.93 | 9.42 |
| 8H              | 4H   | 9.90             | 10.29 | 11.00 | 11.38 | 12.87 | 6.14           | 6.53 | 7.24 | 7.63 | 9.12 |
|                 | 6H   | 10.46            | 10.78 | 11.58 | 11.91 | 13.40 | 6.65           | 6.97 | 7.77 | 8.11 | 9.60 |
|                 | 8H   | 10.67            | 10.95 | 11.80 | 12.07 | 13.57 | 6.84           | 7.12 | 7.97 | 8.24 | 9.74 |
|                 | 12H  | 10.80            | 11.04 | 11.93 | 12.16 | 13.70 | 6.95           | 7.20 | 8.08 | 8.31 | 9.86 |
| 12H             | 4H   | 9.85             | 10.20 | 10.97 | 11.31 | 12.80 | 6.14           | 6.49 | 7.26 | 7.60 | 9.10 |
|                 | 6H   | 10.43            | 10.71 | 11.56 | 11.83 | 13.34 | 6.70           | 6.98 | 7.83 | 8.10 | 9.60 |
|                 | 8H   | 10.64            | 10.89 | 11.77 | 12.00 | 13.55 | 6.90           | 7.15 | 8.03 | 8.26 | 9.81 |