

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: P918943

Luminaire Tested: DFN2DIP-HX3F0-050D050US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918943  
REPORT IS A COMBINATION OF REPORTS P900753 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-050D050US935-FLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

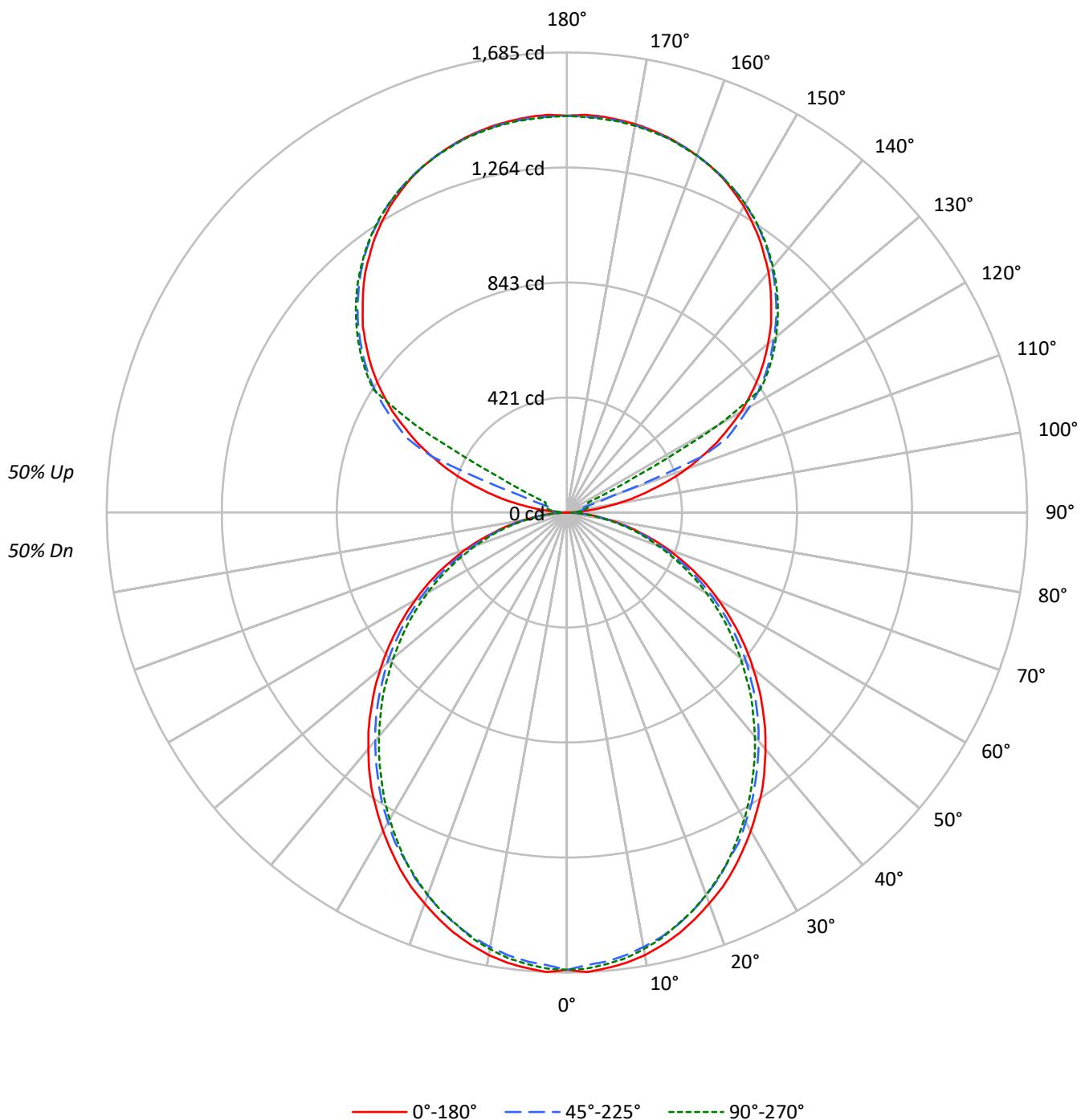
Lumens per Lamp: N/A  
Luminaire Lumens: 8523.9 lumens  
Efficiency: N/A  
Efficacy: 104.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 81.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 93  | 90  | 86  | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 |
| 2   | 89  | 82  | 75  | 70  | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 |
| 3   | 81  | 72  | 64  | 59  | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 |
| 5   | 68  | 57  | 48  | 42  | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 |
| 8   | 54  | 42  | 34  | 29  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1940 | 1940 | 1940 |
| 5°  | 1943 | 1912 | 1925 |
| 10° | 1926 | 1885 | 1898 |
| 15° | 1897 | 1852 | 1856 |
| 20° | 1858 | 1808 | 1813 |
| 25° | 1819 | 1755 | 1764 |
| 30° | 1770 | 1706 | 1702 |
| 35° | 1724 | 1648 | 1636 |
| 40° | 1667 | 1589 | 1573 |
| 45° | 1611 | 1530 | 1509 |
| 50° | 1549 | 1469 | 1435 |
| 55° | 1484 | 1397 | 1366 |
| 60° | 1410 | 1313 | 1287 |
| 65° | 1330 | 1224 | 1194 |
| 70° | 1228 | 1117 | 1095 |
| 75° | 1087 | 988  | 1001 |
| 80° | 917  | 824  | 824  |
| 85° | 650  | 546  | 534  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1611 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 157.7  | 1.8       |
| 10°-20°   | 443.6  | 5.2       |
| 20°-30°   | 651.9  | 7.6       |
| 30°-40°   | 757.2  | 8.9       |
| 40°-50°   | 756.2  | 8.9       |
| 50°-60°   | 659.4  | 7.7       |
| 60°-70°   | 487.4  | 5.7       |
| 70°-80°   | 275.8  | 3.2       |
| 80°-90°   | 75.3   | 0.9       |
| 90°-100°  | 47.9   | 0.6       |
| 100°-110° | 178.6  | 2.1       |
| 110°-120° | 473.7  | 5.6       |
| 120°-130° | 785.6  | 9.2       |
| 130°-140° | 834.5  | 9.8       |
| 140°-150° | 775.6  | 9.1       |
| 150°-160° | 623.5  | 7.3       |
| 160°-170° | 401.8  | 4.7       |
| 170°-180° | 138.3  | 1.6       |
| 0°-30°    | 1253.2 | 14.7      |
| 0°-40°    | 2010.3 | 23.6      |
| 0°-60°    | 3425.9 | 40.2      |
| 0°-90°    | 4264.5 | 50.0      |
| 90°-120°  | 700.2  | 8.2       |
| 90°-150°  | 3095.8 | 36.3      |
| 90°-180°  | 4259.0 | 50.0      |
| 0°-180°   | 8523.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1675 | 1675  | 1675 | 1675  | 1675 |      |
| 5°   | 1675 | 1669  | 1651 | 1664  | 1661 | 159  |
| 15°  | 1595 | 1585  | 1564 | 1570  | 1562 | 449  |
| 25°  | 1443 | 1430  | 1403 | 1406  | 1403 | 664  |
| 35°  | 1245 | 1229  | 1203 | 1194  | 1186 | 778  |
| 45°  | 1013 | 1002  | 978  | 960   | 954  | 782  |
| 55°  | 767  | 757   | 738  | 718   | 710  | 686  |
| 65°  | 517  | 507   | 491  | 477   | 469  | 511  |
| 75°  | 270  | 267   | 259  | 250   | 253  | 289  |
| 85°  | 66   | 64    | 63   | 58    | 56   | 74   |
| 90°  | 1    | 13    | 21   | 26    | 28   | 8    |
| 95°  | 68   | 34    | 41   | 46    | 45   | 81   |
| 105° | 320  | 351   | 64   | 76    | 80   | 342  |
| 115° | 604  | 622   | 649  | 162   | 86   | 595  |
| 125° | 855  | 868   | 888  | 896   | 899  | 762  |
| 135° | 1058 | 1074  | 1084 | 1094  | 1092 | 817  |
| 145° | 1227 | 1226  | 1244 | 1251  | 1246 | 767  |
| 155° | 1351 | 1342  | 1354 | 1360  | 1352 | 622  |
| 165° | 1423 | 1417  | 1420 | 1428  | 1420 | 402  |
| 175° | 1456 | 1449  | 1451 | 1458  | 1448 | 139  |
| 180° | 1453 | 1453  | 1453 | 1453  | 1453 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1675.1 | 1675.1 | 1675.1 | 1675.1 | 1675.1 |
| 2.5°   | 1684.8 | 1676.8 | 1659.1 | 1675.1 | 1672.1 |
| 5°     | 1675.1 | 1668.8 | 1651.0 | 1663.8 | 1660.8 |
| 7.5°   | 1663.8 | 1654.2 | 1636.5 | 1649.5 | 1646.2 |
| 10°    | 1646.2 | 1634.9 | 1615.7 | 1628.4 | 1623.7 |
| 12.5°  | 1621.9 | 1612.4 | 1593.1 | 1601.1 | 1597.8 |
| 15°    | 1594.6 | 1585.0 | 1564.0 | 1570.5 | 1562.5 |
| 17.5°  | 1560.7 | 1551.2 | 1530.2 | 1538.2 | 1530.2 |
| 20°    | 1523.7 | 1514.2 | 1491.6 | 1496.3 | 1490.0 |
| 22.5°  | 1486.8 | 1472.2 | 1451.2 | 1451.2 | 1447.9 |
| 25°    | 1443.2 | 1430.4 | 1403.0 | 1406.1 | 1403.0 |
| 27.5°  | 1394.8 | 1383.5 | 1362.7 | 1357.9 | 1349.9 |
| 30°    | 1346.6 | 1333.7 | 1309.6 | 1304.8 | 1298.3 |
| 32.5°  | 1295.0 | 1285.5 | 1259.6 | 1249.9 | 1243.5 |
| 35°    | 1245.1 | 1229.1 | 1203.2 | 1193.5 | 1185.5 |
| 37.5°  | 1188.7 | 1174.2 | 1148.4 | 1137.1 | 1129.1 |
| 40°    | 1130.8 | 1117.8 | 1092.0 | 1077.6 | 1071.2 |
| 42.5°  | 1074.4 | 1061.4 | 1035.8 | 1019.5 | 1010.0 |
| 45°    | 1013.2 | 1001.9 | 977.7  | 960.1  | 953.6  |
| 47.5°  | 953.6  | 942.3  | 916.5  | 898.7  | 889.2  |
| 50°    | 890.7  | 882.7  | 860.1  | 837.6  | 829.5  |
| 52.5°  | 829.5  | 818.2  | 797.4  | 779.6  | 768.4  |
| 55°    | 766.8  | 757.1  | 737.7  | 718.4  | 710.4  |
| 57.5°  | 703.9  | 695.9  | 674.9  | 655.6  | 649.0  |
| 60°    | 641.0  | 634.7  | 612.2  | 594.3  | 589.6  |
| 62.5°  | 579.9  | 568.6  | 552.5  | 536.4  | 529.9  |
| 65°    | 517.1  | 507.4  | 491.3  | 476.8  | 468.7  |
| 67.5°  | 452.7  | 444.5  | 430.2  | 418.9  | 412.3  |
| 70°    | 393.0  | 386.6  | 372.0  | 360.8  | 354.5  |
| 72.5°  | 331.9  | 325.4  | 317.4  | 306.1  | 301.3  |
| 75°    | 270.5  | 267.4  | 259.2  | 249.7  | 253.0  |
| 77.5°  | 215.9  | 209.3  | 206.1  | 201.3  | 196.6  |
| 80°    | 161.2  | 159.5  | 156.2  | 151.4  | 148.2  |
| 82.5°  | 109.5  | 109.5  | 108.0  | 101.5  | 101.5  |
| 85°    | 66.0   | 64.4   | 62.9   | 57.9   | 56.4   |
| 87.5°  | 29.0   | 25.8   | 22.6   | 17.7   | 16.1   |
| 90°    | 1.0    | 12.6   | 21.0   | 26.3   | 28.3   |
| 92.5°  | 26.3   | 22.1   | 25.2   | 27.4   | 28.3   |
| 95°    | 68.3   | 33.6   | 41.0   | 46.3   | 45.2   |
| 97.5°  | 123.0  | 36.9   | 53.6   | 56.8   | 57.8   |
| 100°   | 186.1  | 42.1   | 59.9   | 68.3   | 70.4   |
| 102.5° | 255.5  | 253.4  | 62.1   | 73.5   | 76.8   |
| 105°   | 319.6  | 351.2  | 64.1   | 75.7   | 79.9   |
| 107.5° | 394.3  | 420.4  | 66.3   | 77.7   | 82.1   |
| 110°   | 465.8  | 487.8  | 184.0  | 78.9   | 83.0   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 533.0  | 551.9  | 534.1  | 80.9   | 84.1   |
| 115°   | 604.5  | 622.3  | 648.7  | 162.0  | 86.3   |
| 117.5° | 666.5  | 687.5  | 705.5  | 555.0  | 279.7  |
| 120°   | 735.9  | 751.7  | 770.6  | 783.2  | 641.3  |
| 122.5° | 794.7  | 811.6  | 832.7  | 839.0  | 840.1  |
| 125°   | 854.6  | 868.4  | 888.4  | 895.7  | 898.9  |
| 127.5° | 909.3  | 924.0  | 940.0  | 950.4  | 951.4  |
| 130°   | 960.9  | 977.7  | 989.2  | 1000.8 | 999.9  |
| 132.5° | 1013.5 | 1027.2 | 1038.6 | 1048.2 | 1047.1 |
| 135°   | 1057.6 | 1074.5 | 1083.8 | 1094.5 | 1092.3 |
| 137.5° | 1103.8 | 1116.5 | 1127.0 | 1137.6 | 1134.5 |
| 140°   | 1149.0 | 1157.5 | 1169.0 | 1178.4 | 1173.3 |
| 142.5° | 1187.0 | 1194.4 | 1208.0 | 1216.3 | 1211.1 |
| 145°   | 1226.9 | 1225.8 | 1243.6 | 1251.0 | 1245.8 |
| 147.5° | 1261.5 | 1258.3 | 1276.3 | 1281.5 | 1277.4 |
| 150°   | 1295.2 | 1287.9 | 1304.7 | 1311.0 | 1305.7 |
| 152.5° | 1323.5 | 1315.2 | 1330.9 | 1337.3 | 1329.9 |
| 155°   | 1350.9 | 1341.5 | 1354.1 | 1360.4 | 1352.0 |
| 157.5° | 1372.9 | 1364.6 | 1374.1 | 1381.5 | 1372.9 |
| 160°   | 1392.0 | 1385.6 | 1392.0 | 1398.2 | 1390.9 |
| 162.5° | 1408.7 | 1402.5 | 1407.6 | 1415.0 | 1405.6 |
| 165°   | 1423.4 | 1417.2 | 1420.3 | 1427.6 | 1420.3 |
| 167.5° | 1435.0 | 1428.7 | 1431.9 | 1439.2 | 1429.8 |
| 170°   | 1444.5 | 1438.1 | 1440.3 | 1447.6 | 1438.1 |
| 172.5° | 1450.8 | 1444.5 | 1446.6 | 1454.0 | 1444.5 |
| 175°   | 1456.0 | 1448.6 | 1450.8 | 1458.1 | 1447.6 |
| 177.5° | 1458.1 | 1450.8 | 1451.9 | 1459.2 | 1449.7 |
| 180°   | 1452.8 | 1452.8 | 1452.8 | 1452.8 | 1452.8 |

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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 | 9.53             | 10.40 | 10.49 | 11.37 | 12.64 | 9.11           | 9.97  | 10.06 | 10.94 | 12.21 |
|                 | 3H   | 11.19            | 11.96 | 12.16 | 12.94 | 14.23 | 10.72          | 11.49 | 11.69 | 12.47 | 13.77 |
|                 | 4H   | 11.77            | 12.50 | 12.75 | 13.49 | 14.79 | 11.30          | 12.03 | 12.28 | 13.02 | 14.32 |
|                 | 6H   | 12.16            | 12.84 | 13.16 | 13.83 | 15.14 | 11.69          | 12.37 | 12.69 | 13.36 | 14.67 |
|                 | 8H   | 12.27            | 12.91 | 13.26 | 13.91 | 15.23 | 11.80          | 12.44 | 12.80 | 13.45 | 14.76 |
|                 | 12H  | 12.31            | 12.92 | 13.31 | 13.92 | 15.26 | 11.84          | 12.45 | 12.84 | 13.45 | 14.78 |
| 4H              | 2H   | 9.99             | 10.72 | 10.98 | 11.71 | 13.01 | 9.65           | 10.38 | 10.64 | 11.37 | 12.67 |
|                 | 3H   | 11.85            | 12.46 | 12.85 | 13.48 | 14.79 | 11.46          | 12.07 | 12.46 | 13.09 | 14.40 |
|                 | 4H   | 12.56            | 13.12 | 13.56 | 14.12 | 15.46 | 12.16          | 12.72 | 13.16 | 13.72 | 15.06 |
|                 | 6H   | 13.07            | 13.55 | 14.08 | 14.58 | 15.91 | 12.66          | 13.14 | 13.68 | 14.17 | 15.51 |
|                 | 8H   | 13.21            | 13.66 | 14.23 | 14.69 | 16.04 | 12.81          | 13.25 | 13.82 | 14.28 | 15.63 |
|                 | 12H  | 13.28            | 13.69 | 14.32 | 14.73 | 16.08 | 12.87          | 13.27 | 13.90 | 14.31 | 15.67 |
| 8H              | 4H   | 12.75            | 13.20 | 13.77 | 14.22 | 15.58 | 12.39          | 12.84 | 13.41 | 13.87 | 15.22 |
|                 | 6H   | 13.37            | 13.75 | 14.42 | 14.81 | 16.16 | 13.02          | 13.39 | 14.06 | 14.45 | 15.80 |
|                 | 8H   | 13.59            | 13.92 | 14.64 | 14.97 | 16.34 | 13.23          | 13.55 | 14.28 | 14.60 | 15.97 |
|                 | 12H  | 13.72            | 14.00 | 14.77 | 15.05 | 16.46 | 13.34          | 13.62 | 14.39 | 14.67 | 16.08 |
| 12H             | 4H   | 12.74            | 13.14 | 13.77 | 14.18 | 15.54 | 12.39          | 12.79 | 13.42 | 13.83 | 15.19 |
|                 | 6H   | 13.40            | 13.73 | 14.45 | 14.78 | 16.15 | 13.05          | 13.38 | 14.10 | 14.43 | 15.80 |
|                 | 8H   | 13.64            | 13.93 | 14.69 | 14.97 | 16.38 | 13.29          | 13.57 | 14.34 | 14.62 | 16.03 |