

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: P926157

Luminaire Tested: DFN2DIP-TR2F0-050D050US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926157  
REPORT IS A COMBINATION OF REPORTS P901777 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-050D050US950-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

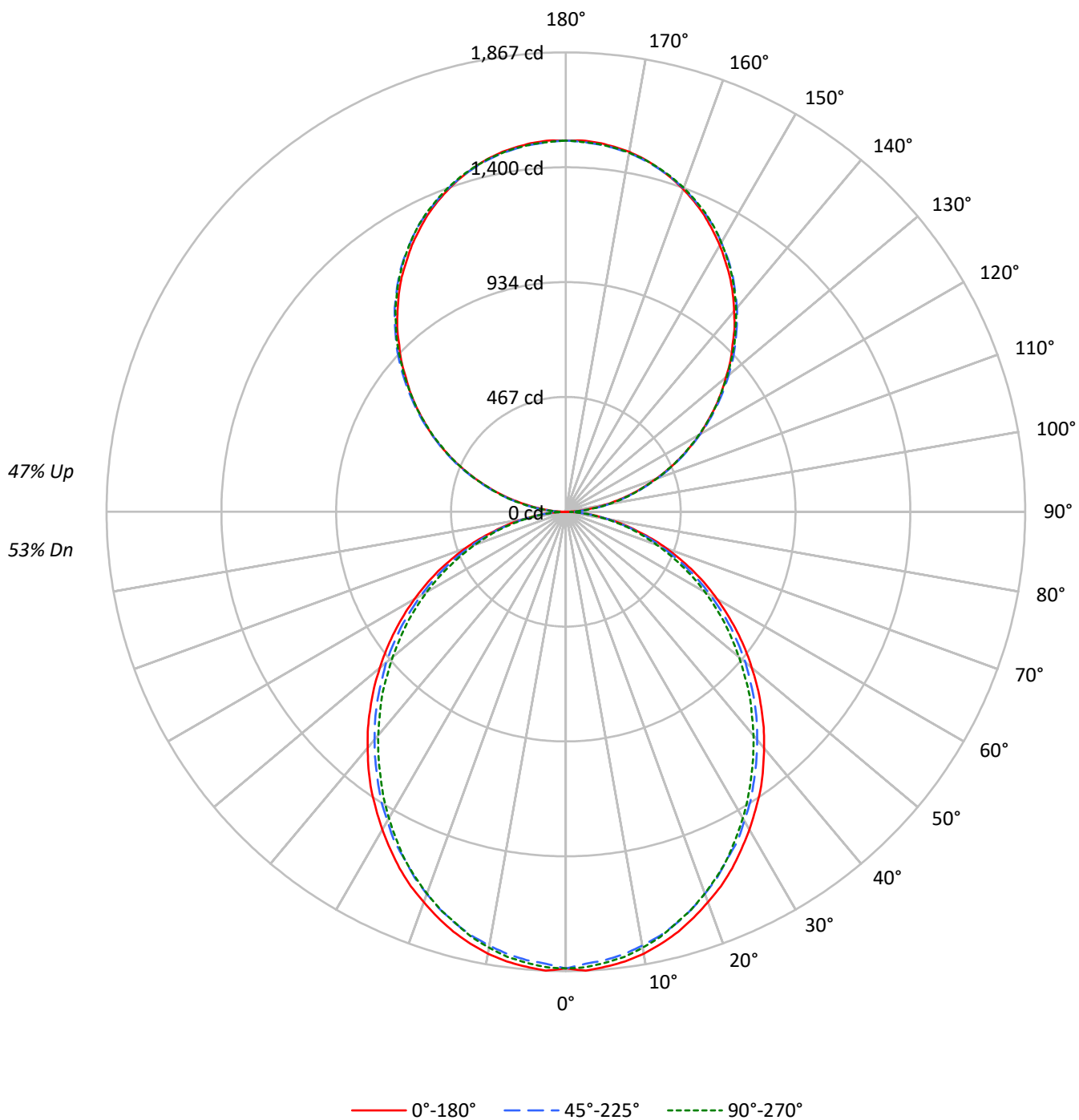
Lumens per Lamp: N/A  
Luminaire Lumens: 8943.7 lumens  
Efficiency: N/A  
Efficacy: 104.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 86  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4140 | 4140 | 4140 |
| 5°  | 4140 | 4073 | 4103 |
| 10° | 4100 | 4009 | 4040 |
| 15° | 4034 | 3933 | 3946 |
| 20° | 3946 | 3833 | 3850 |
| 25° | 3859 | 3714 | 3740 |
| 30° | 3751 | 3603 | 3603 |
| 35° | 3648 | 3473 | 3458 |
| 40° | 3523 | 3342 | 3320 |
| 45° | 3397 | 3210 | 3177 |
| 50° | 3260 | 3071 | 3014 |
| 55° | 3115 | 2910 | 2861 |
| 60° | 2952 | 2722 | 2687 |
| 65° | 2772 | 2524 | 2481 |
| 70° | 2544 | 2283 | 2258 |
| 75° | 2230 | 1995 | 2043 |
| 80° | 1850 | 1628 | 1651 |
| 85° | 1260 | 1025 | 1026 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3397 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.7  | 2.0       |
| 10°-20°   | 491.5  | 5.5       |
| 20°-30°   | 722.3  | 8.1       |
| 30°-40°   | 838.9  | 9.4       |
| 40°-50°   | 837.9  | 9.4       |
| 50°-60°   | 730.6  | 8.2       |
| 60°-70°   | 540.1  | 6.0       |
| 70°-80°   | 305.6  | 3.4       |
| 80°-90°   | 84.9   | 0.9       |
| 90°-100°  | 93.4   | 1.0       |
| 100°-110° | 296.6  | 3.3       |
| 110°-120° | 507.6  | 5.7       |
| 120°-130° | 667.5  | 7.5       |
| 130°-140° | 749.3  | 8.4       |
| 140°-150° | 734.8  | 8.2       |
| 150°-160° | 616.4  | 6.9       |
| 160°-170° | 408.8  | 4.6       |
| 170°-180° | 142.9  | 1.6       |
| 0°-30°    | 1388.5 | 15.5      |
| 0°-40°    | 2227.5 | 24.9      |
| 0°-60°    | 3796.0 | 42.4      |
| 0°-90°    | 4726.6 | 52.8      |
| 90°-120°  | 897.5  | 10.0      |
| 90°-150°  | 3049.2 | 34.1      |
| 90°-180°  | 4217.0 | 47.2      |
| 0°-180°   | 8943.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1856 | 1856  | 1856 | 1856  | 1856 |      |
| 5°   | 1856 | 1849  | 1829 | 1844  | 1840 | 176  |
| 15°  | 1767 | 1756  | 1733 | 1740  | 1731 | 498  |
| 25°  | 1599 | 1585  | 1554 | 1558  | 1554 | 736  |
| 35°  | 1380 | 1362  | 1333 | 1322  | 1314 | 862  |
| 45°  | 1123 | 1110  | 1083 | 1064  | 1057 | 866  |
| 55°  | 850  | 839   | 817  | 796   | 787  | 760  |
| 65°  | 573  | 562   | 544  | 528   | 519  | 567  |
| 75°  | 300  | 296   | 287  | 277   | 280  | 320  |
| 85°  | 73   | 71    | 70   | 64    | 62   | 82   |
| 90°  | 1    | 16    | 45   | 42    | 43   | 9    |
| 95°  | 66   | 79    | 81   | 81    | 79   | 74   |
| 105° | 274  | 277   | 280  | 282   | 282  | 289  |
| 115° | 509  | 517   | 514  | 513   | 509  | 504  |
| 125° | 741  | 752   | 749  | 744   | 743  | 662  |
| 135° | 958  | 972   | 975  | 974   | 970  | 741  |
| 145° | 1163 | 1172  | 1180 | 1181  | 1176 | 727  |
| 155° | 1330 | 1334  | 1338 | 1344  | 1340 | 612  |
| 165° | 1447 | 1446  | 1446 | 1455  | 1449 | 408  |
| 175° | 1506 | 1502  | 1500 | 1509  | 1501 | 143  |
| 180° | 1509 | 1509  | 1509 | 1509  | 1509 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1856.0 | 1856.0 | 1856.0 | 1856.0 | 1856.0 |
| 2.5°   | 1866.8 | 1857.9 | 1838.3 | 1856.0 | 1852.7 |
| 5°     | 1856.0 | 1849.0 | 1829.3 | 1843.5 | 1840.2 |
| 7.5°   | 1843.5 | 1832.9 | 1813.3 | 1827.7 | 1824.0 |
| 10°    | 1824.0 | 1811.6 | 1790.2 | 1804.3 | 1799.1 |
| 12.5°  | 1797.1 | 1786.6 | 1765.2 | 1774.1 | 1770.4 |
| 15°    | 1766.8 | 1756.2 | 1732.9 | 1740.2 | 1731.2 |
| 17.5°  | 1729.3 | 1718.7 | 1695.4 | 1704.3 | 1695.4 |
| 20°    | 1688.3 | 1677.7 | 1652.7 | 1658.0 | 1651.0 |
| 22.5°  | 1647.4 | 1631.2 | 1608.0 | 1608.0 | 1604.3 |
| 25°    | 1599.1 | 1584.9 | 1554.5 | 1558.0 | 1554.5 |
| 27.5°  | 1545.5 | 1533.0 | 1509.9 | 1504.6 | 1495.7 |
| 30°    | 1492.1 | 1477.7 | 1451.0 | 1445.7 | 1438.5 |
| 32.5°  | 1434.9 | 1424.3 | 1395.7 | 1384.9 | 1377.8 |
| 35°    | 1379.6 | 1361.8 | 1333.2 | 1322.4 | 1313.6 |
| 37.5°  | 1317.1 | 1301.1 | 1272.4 | 1259.9 | 1251.1 |
| 40°    | 1253.0 | 1238.6 | 1210.0 | 1194.0 | 1186.9 |
| 42.5°  | 1190.5 | 1176.1 | 1147.7 | 1129.6 | 1119.0 |
| 45°    | 1122.7 | 1110.2 | 1083.3 | 1063.8 | 1056.6 |
| 47.5°  | 1056.6 | 1044.1 | 1015.5 | 995.8  | 985.2  |
| 50°    | 986.9  | 978.0  | 953.0  | 928.1  | 919.1  |
| 52.5°  | 919.1  | 906.6  | 883.5  | 863.8  | 851.3  |
| 55°    | 849.6  | 838.9  | 817.4  | 796.0  | 787.1  |
| 57.5°  | 779.9  | 771.0  | 747.7  | 726.4  | 719.1  |
| 60°    | 710.3  | 703.3  | 678.3  | 658.5  | 653.3  |
| 62.5°  | 642.5  | 630.0  | 612.2  | 594.3  | 587.2  |
| 65°    | 573.0  | 562.2  | 544.4  | 528.3  | 519.4  |
| 67.5°  | 501.6  | 492.6  | 476.6  | 464.1  | 456.9  |
| 70°    | 435.5  | 428.3  | 412.2  | 399.7  | 392.8  |
| 72.5°  | 367.8  | 360.5  | 351.6  | 339.1  | 333.8  |
| 75°    | 299.7  | 296.3  | 287.2  | 276.7  | 280.3  |
| 77.5°  | 239.2  | 231.9  | 228.4  | 223.0  | 217.8  |
| 80°    | 178.6  | 176.7  | 173.1  | 167.8  | 164.2  |
| 82.5°  | 121.3  | 121.3  | 119.6  | 112.5  | 112.5  |
| 85°    | 73.1   | 71.4   | 69.6   | 64.2   | 62.5   |
| 87.5°  | 32.1   | 28.6   | 25.0   | 19.7   | 17.8   |
| 90°    | 1.3    | 16.4   | 44.6   | 41.9   | 43.2   |
| 92.5°  | 28.2   | 38.2   | 39.6   | 40.9   | 40.9   |
| 95°    | 66.4   | 79.2   | 81.4   | 81.4   | 79.2   |
| 97.5°  | 110.5  | 122.3  | 127.4  | 127.4  | 127.4  |
| 100°   | 161.4  | 171.9  | 175.5  | 175.5  | 174.2  |
| 102.5° | 215.1  | 222.9  | 227.8  | 229.2  | 227.8  |
| 105°   | 273.8  | 277.4  | 280.2  | 282.4  | 282.4  |
| 107.5° | 332.0  | 337.4  | 337.4  | 338.4  | 332.0  |
| 110°   | 388.4  | 395.7  | 395.7  | 395.7  | 392.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 449.3  | 457.1  | 455.7  | 452.1  | 449.3  |
| 115°   | 509.3  | 516.7  | 514.4  | 513.1  | 509.3  |
| 117.5° | 569.0  | 579.0  | 572.6  | 569.0  | 565.3  |
| 120°   | 629.0  | 639.0  | 629.0  | 629.0  | 624.9  |
| 122.5° | 683.5  | 696.3  | 689.9  | 686.3  | 683.5  |
| 125°   | 740.9  | 752.2  | 748.6  | 744.5  | 743.2  |
| 127.5° | 796.8  | 810.9  | 805.9  | 800.4  | 796.8  |
| 130°   | 849.2  | 865.5  | 863.2  | 860.5  | 855.5  |
| 132.5° | 907.8  | 920.5  | 921.5  | 915.1  | 911.5  |
| 135°   | 958.3  | 972.3  | 975.1  | 973.7  | 970.1  |
| 137.5° | 1014.7 | 1026.0 | 1028.3 | 1027.4 | 1021.9 |
| 140°   | 1064.2 | 1075.6 | 1081.9 | 1081.9 | 1077.0 |
| 142.5° | 1115.1 | 1126.6 | 1130.2 | 1131.5 | 1126.6 |
| 145°   | 1163.4 | 1172.5 | 1179.7 | 1181.1 | 1176.1 |
| 147.5° | 1206.6 | 1218.0 | 1223.4 | 1225.7 | 1220.6 |
| 150°   | 1251.2 | 1258.9 | 1263.9 | 1268.0 | 1263.9 |
| 152.5° | 1290.8 | 1298.5 | 1304.8 | 1309.8 | 1304.8 |
| 155°   | 1330.3 | 1333.9 | 1338.0 | 1344.4 | 1340.3 |
| 157.5° | 1364.4 | 1367.1 | 1369.4 | 1378.5 | 1372.1 |
| 160°   | 1394.8 | 1397.6 | 1398.9 | 1406.7 | 1401.2 |
| 162.5° | 1423.1 | 1423.1 | 1424.4 | 1433.1 | 1426.7 |
| 165°   | 1447.2 | 1445.8 | 1445.8 | 1454.9 | 1448.6 |
| 167.5° | 1469.0 | 1464.9 | 1464.9 | 1474.0 | 1467.6 |
| 170°   | 1485.4 | 1481.8 | 1480.4 | 1489.5 | 1481.8 |
| 172.5° | 1496.7 | 1493.1 | 1491.8 | 1500.8 | 1493.1 |
| 175°   | 1505.9 | 1502.2 | 1499.5 | 1508.6 | 1500.8 |
| 177.5° | 1510.8 | 1507.2 | 1504.5 | 1512.2 | 1504.5 |
| 180°   | 1508.6 | 1508.6 | 1508.6 | 1508.6 | 1508.6 |

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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 | 12.34            | 13.22 | 13.27 | 14.17 | 15.40 | 11.91          | 12.80 | 12.85 | 13.75 | 14.98 |
|                 | 3H   | 13.98            | 14.77 | 14.92 | 15.73 | 16.98 | 13.52          | 14.31 | 14.46 | 15.27 | 16.52 |
|                 | 4H   | 14.55            | 15.30 | 15.51 | 16.27 | 17.53 | 14.09          | 14.84 | 15.05 | 15.81 | 17.07 |
|                 | 6H   | 14.93            | 15.63 | 15.90 | 16.60 | 17.87 | 14.47          | 15.17 | 15.44 | 16.14 | 17.41 |
|                 | 8H   | 15.03            | 15.69 | 16.00 | 16.68 | 17.95 | 14.57          | 15.23 | 15.55 | 16.22 | 17.49 |
|                 | 12H  | 15.07            | 15.70 | 16.05 | 16.68 | 17.98 | 14.61          | 15.24 | 15.59 | 16.22 | 17.51 |
| 4H              | 2H   | 12.79            | 13.55 | 13.76 | 14.51 | 15.77 | 12.45          | 13.21 | 13.42 | 14.17 | 15.43 |
|                 | 3H   | 14.63            | 15.26 | 15.61 | 16.26 | 17.53 | 14.25          | 14.88 | 15.22 | 15.87 | 17.15 |
|                 | 4H   | 15.33            | 15.91 | 16.31 | 16.89 | 18.19 | 14.94          | 15.51 | 15.92 | 16.50 | 17.80 |
|                 | 6H   | 15.82            | 16.32 | 16.82 | 17.33 | 18.63 | 15.43          | 15.92 | 16.42 | 16.93 | 18.23 |
|                 | 8H   | 15.96            | 16.43 | 16.96 | 17.43 | 18.74 | 15.57          | 16.03 | 16.56 | 17.03 | 18.35 |
|                 | 12H  | 16.03            | 16.45 | 17.04 | 17.46 | 18.78 | 15.62          | 16.04 | 16.64 | 17.06 | 18.38 |
| 8H              | 4H   | 15.52            | 15.98 | 16.52 | 16.99 | 18.30 | 15.17          | 15.63 | 16.16 | 16.63 | 17.95 |
|                 | 6H   | 16.12            | 16.51 | 17.14 | 17.55 | 18.86 | 15.77          | 16.15 | 16.79 | 17.20 | 18.51 |
|                 | 8H   | 16.33            | 16.67 | 17.36 | 17.70 | 19.03 | 15.97          | 16.31 | 17.00 | 17.34 | 18.67 |
|                 | 12H  | 16.45            | 16.74 | 17.48 | 17.77 | 19.14 | 16.08          | 16.37 | 17.11 | 17.40 | 18.77 |
| 12H             | 4H   | 15.50            | 15.92 | 16.52 | 16.94 | 18.26 | 15.16          | 15.58 | 16.17 | 16.60 | 17.92 |
|                 | 6H   | 16.15            | 16.49 | 17.18 | 17.52 | 18.85 | 15.81          | 16.15 | 16.84 | 17.18 | 18.51 |
|                 | 8H   | 16.37            | 16.67 | 17.41 | 17.70 | 19.07 | 16.03          | 16.33 | 17.06 | 17.35 | 18.73 |