

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: P913545

Luminaire Tested: DFN2DIP-HX3F0-070D070US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913545  
REPORT IS A COMBINATION OF REPORTS P900786 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D070US927-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

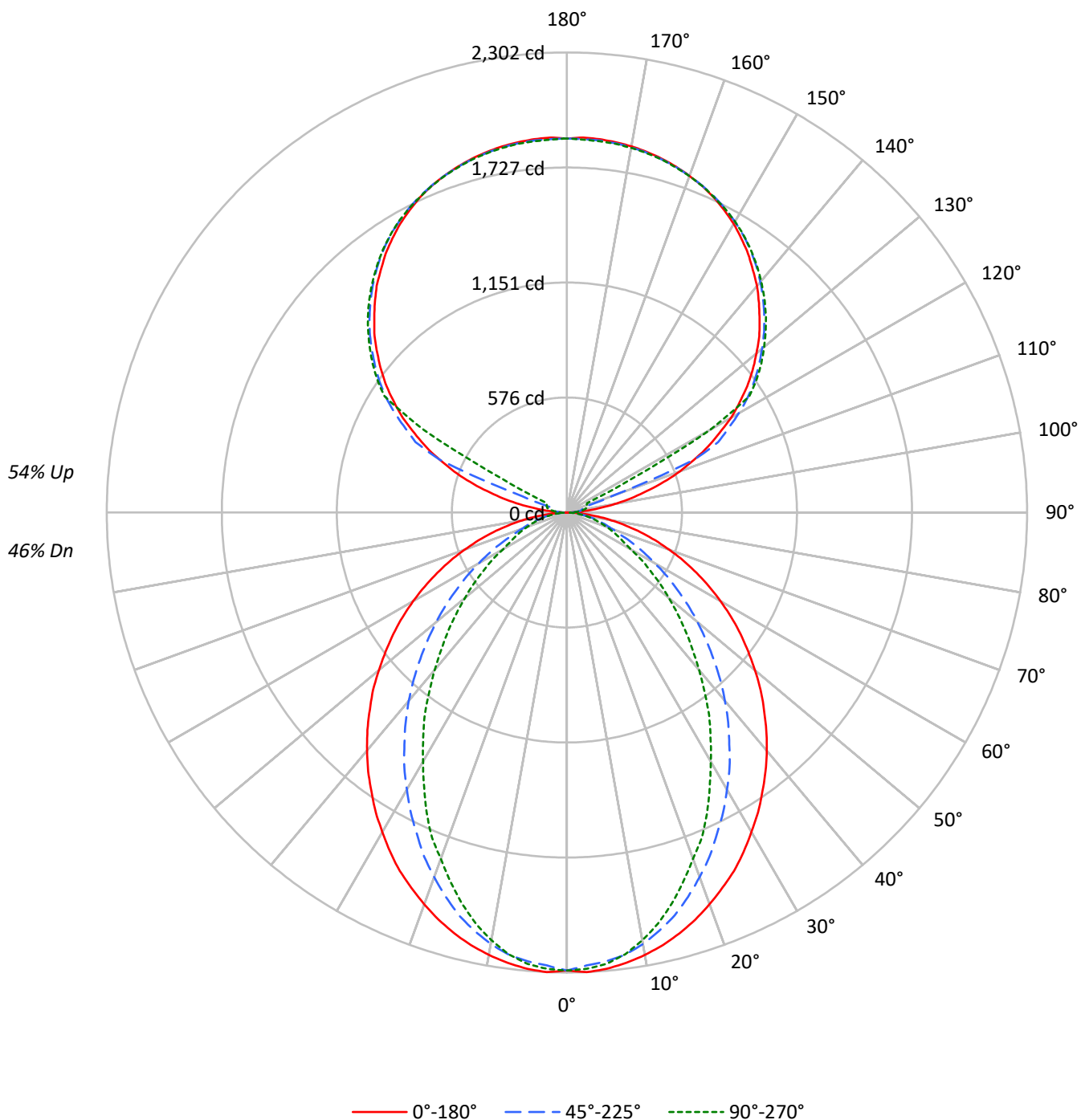
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10203.3 lumens  
Efficiency: N/A  
Efficacy: 83.2 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: General Diffuse  
  
Input Watts (W): 122.6  
Input Voltage (V):  
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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2655 | 2655 | 2655 |
| 5°  | 2658 | 2611 | 2628 |
| 10° | 2630 | 2558 | 2541 |
| 15° | 2593 | 2471 | 2407 |
| 20° | 2544 | 2353 | 2244 |
| 25° | 2493 | 2221 | 2086 |
| 30° | 2426 | 2086 | 1887 |
| 35° | 2360 | 1940 | 1712 |
| 40° | 2293 | 1790 | 1511 |
| 45° | 2216 | 1623 | 1329 |
| 50° | 2135 | 1456 | 1152 |
| 55° | 2051 | 1276 | 981  |
| 60° | 1953 | 1089 | 806  |
| 65° | 1841 | 899  | 724  |
| 70° | 1705 | 722  | 653  |
| 75° | 1533 | 633  | 591  |
| 80° | 1285 | 525  | 508  |
| 85° | 878  | 342  | 373  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2216 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 214.8   | 2.1       |
| 10°-20°   | 589.7   | 5.8       |
| 20°-30°   | 827.9   | 8.1       |
| 30°-40°   | 902.4   | 8.8       |
| 40°-50°   | 829.4   | 8.1       |
| 50°-60°   | 651.4   | 6.4       |
| 60°-70°   | 424.0   | 4.2       |
| 70°-80°   | 218.2   | 2.1       |
| 80°-90°   | 59.0    | 0.6       |
| 90°-100°  | 61.7    | 0.6       |
| 100°-110° | 230.0   | 2.3       |
| 110°-120° | 610.1   | 6.0       |
| 120°-130° | 1011.9  | 9.9       |
| 130°-140° | 1074.9  | 10.5      |
| 140°-150° | 999.0   | 9.8       |
| 150°-160° | 803.2   | 7.9       |
| 160°-170° | 517.5   | 5.1       |
| 170°-180° | 178.1   | 1.7       |
| <hr/>     |         |           |
| 0°-30°    | 1632.3  | 16.0      |
| 0°-40°    | 2534.7  | 24.8      |
| 0°-60°    | 4015.5  | 39.4      |
| 0°-90°    | 4716.7  | 46.2      |
| 90°-120°  | 901.9   | 8.8       |
| 90°-150°  | 3987.7  | 39.1      |
| 90°-180°  | 5487.0  | 53.8      |
| 0°-180°   | 10203.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2292 | 2292  | 2292 | 2292  | 2292 |      |
| 5°   | 2292 | 2282  | 2254 | 2273  | 2267 | 217  |
| 15°  | 2180 | 2157  | 2086 | 2047  | 2026 | 614  |
| 25°  | 1979 | 1912  | 1775 | 1690  | 1659 | 910  |
| 35°  | 1705 | 1599  | 1417 | 1286  | 1240 | 1067 |
| 45°  | 1394 | 1255  | 1037 | 890   | 840  | 1076 |
| 55°  | 1060 | 898   | 674  | 550   | 510  | 947  |
| 65°  | 716  | 548   | 361  | 290   | 284  | 709  |
| 75°  | 382  | 236   | 166  | 151   | 149  | 404  |
| 85°  | 89   | 46    | 39   | 39    | 39   | 102  |
| 90°  | 1    | 16    | 27   | 34    | 36   | 10   |
| 95°  | 88   | 43    | 53   | 60    | 58   | 104  |
| 105° | 412  | 452   | 83   | 97    | 103  | 440  |
| 115° | 779  | 802   | 836  | 209   | 111  | 767  |
| 125° | 1101 | 1119  | 1144 | 1154  | 1158 | 982  |
| 135° | 1362 | 1384  | 1396 | 1410  | 1407 | 1052 |
| 145° | 1580 | 1579  | 1602 | 1612  | 1605 | 988  |
| 155° | 1740 | 1728  | 1744 | 1752  | 1742 | 802  |
| 165° | 1834 | 1826  | 1830 | 1839  | 1830 | 518  |
| 175° | 1876 | 1866  | 1869 | 1878  | 1865 | 178  |
| 180° | 1871 | 1871  | 1871 | 1871  | 1871 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2291.9 | 2291.9 | 2291.9 | 2291.9 | 2291.9 |
| 2.5°   | 2302.2 | 2291.9 | 2269.0 | 2289.9 | 2285.7 |
| 5°     | 2291.9 | 2281.5 | 2254.5 | 2273.2 | 2267.0 |
| 7.5°   | 2273.2 | 2260.8 | 2231.8 | 2239.9 | 2229.6 |
| 10°    | 2248.3 | 2233.8 | 2192.4 | 2186.0 | 2173.7 |
| 12.5°  | 2217.2 | 2198.5 | 2142.5 | 2130.1 | 2107.2 |
| 15°    | 2179.8 | 2157.0 | 2086.5 | 2047.2 | 2026.5 |
| 17.5°  | 2136.3 | 2103.1 | 2015.9 | 1970.3 | 1937.1 |
| 20°    | 2086.5 | 2044.9 | 1941.3 | 1889.6 | 1843.8 |
| 22.5°  | 2032.7 | 1984.9 | 1864.5 | 1794.1 | 1763.1 |
| 25°    | 1978.7 | 1912.2 | 1775.4 | 1690.4 | 1659.2 |
| 27.5°  | 1914.5 | 1843.8 | 1692.4 | 1595.0 | 1547.2 |
| 30°    | 1846.0 | 1767.0 | 1601.1 | 1495.5 | 1439.4 |
| 32.5°  | 1779.6 | 1684.1 | 1514.2 | 1389.6 | 1337.7 |
| 35°    | 1704.9 | 1599.1 | 1416.7 | 1286.0 | 1240.2 |
| 37.5°  | 1632.4 | 1518.1 | 1325.4 | 1182.1 | 1130.4 |
| 40°    | 1555.5 | 1431.2 | 1229.9 | 1082.7 | 1028.7 |
| 42.5°  | 1476.8 | 1344.1 | 1134.6 | 981.0  | 929.3  |
| 45°    | 1393.8 | 1254.7 | 1037.1 | 889.7  | 839.9  |
| 47.5°  | 1315.0 | 1167.8 | 943.8  | 796.4  | 750.8  |
| 50°    | 1227.9 | 1080.7 | 852.5  | 709.2  | 665.9  |
| 52.5°  | 1142.7 | 987.1  | 765.3  | 628.4  | 589.1  |
| 55°    | 1059.8 | 898.0  | 674.0  | 549.7  | 510.3  |
| 57.5°  | 974.9  | 808.9  | 593.3  | 477.1  | 443.9  |
| 60°    | 887.7  | 721.8  | 508.1  | 402.5  | 369.2  |
| 62.5°  | 802.7  | 636.8  | 435.5  | 336.0  | 319.5  |
| 65°    | 715.6  | 547.5  | 360.9  | 290.5  | 284.1  |
| 67.5°  | 632.6  | 464.5  | 290.5  | 255.0  | 248.9  |
| 70°    | 545.5  | 383.7  | 240.5  | 219.8  | 211.4  |
| 72.5°  | 462.6  | 309.0  | 201.1  | 184.7  | 180.5  |
| 75°    | 381.6  | 236.3  | 165.9  | 151.4  | 149.4  |
| 77.5°  | 300.8  | 167.9  | 130.7  | 122.3  | 118.2  |
| 80°    | 226.0  | 120.3  | 99.5   | 91.3   | 91.3   |
| 82.5°  | 157.6  | 81.0   | 68.4   | 64.2   | 64.2   |
| 85°    | 89.1   | 45.6   | 39.4   | 39.4   | 39.4   |
| 87.5°  | 33.2   | 16.5   | 16.5   | 14.5   | 14.5   |
| 90°    | 1.3    | 16.2   | 27.0   | 33.9   | 36.5   |
| 92.5°  | 33.9   | 28.4   | 32.5   | 35.3   | 36.5   |
| 95°    | 87.9   | 43.3   | 52.8   | 59.7   | 58.2   |
| 97.5°  | 158.4  | 47.5   | 69.0   | 73.2   | 74.5   |
| 100°   | 239.8  | 54.2   | 77.2   | 87.9   | 90.7   |
| 102.5° | 329.0  | 326.5  | 79.9   | 94.7   | 98.9   |
| 105°   | 411.7  | 452.3  | 82.6   | 97.4   | 102.9  |
| 107.5° | 507.8  | 541.6  | 85.4   | 100.2  | 105.7  |
| 110°   | 600.0  | 628.3  | 237.0  | 101.6  | 106.9  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 686.7  | 710.9  | 687.9  | 104.2  | 108.4  |
| 115°   | 778.6  | 801.6  | 835.5  | 208.6  | 111.1  |
| 117.5° | 858.6  | 885.6  | 908.7  | 714.9  | 360.2  |
| 120°   | 947.9  | 968.2  | 992.7  | 1008.9 | 826.1  |
| 122.5° | 1023.7 | 1045.4 | 1072.6 | 1080.6 | 1082.0 |
| 125°   | 1100.9 | 1118.6 | 1144.3 | 1153.8 | 1157.8 |
| 127.5° | 1171.3 | 1190.3 | 1210.7 | 1224.2 | 1225.5 |
| 130°   | 1237.7 | 1259.4 | 1274.2 | 1289.2 | 1287.9 |
| 132.5° | 1305.4 | 1323.1 | 1337.9 | 1350.1 | 1348.8 |
| 135°   | 1362.3 | 1384.0 | 1396.1 | 1409.8 | 1407.1 |
| 137.5° | 1421.8 | 1438.1 | 1451.8 | 1465.3 | 1461.3 |
| 140°   | 1480.0 | 1491.0 | 1505.8 | 1518.0 | 1511.2 |
| 142.5° | 1528.9 | 1538.4 | 1555.9 | 1566.7 | 1560.0 |
| 145°   | 1580.4 | 1579.0 | 1601.9 | 1611.5 | 1604.7 |
| 147.5° | 1624.9 | 1621.0 | 1643.9 | 1650.7 | 1645.4 |
| 150°   | 1668.3 | 1658.9 | 1680.6 | 1688.6 | 1681.9 |
| 152.5° | 1704.9 | 1694.1 | 1714.4 | 1722.5 | 1713.1 |
| 155°   | 1740.1 | 1728.0 | 1744.2 | 1752.3 | 1741.5 |
| 157.5° | 1768.5 | 1757.8 | 1770.0 | 1779.5 | 1768.5 |
| 160°   | 1793.0 | 1784.8 | 1793.0 | 1801.0 | 1791.5 |
| 162.5° | 1814.6 | 1806.5 | 1813.2 | 1822.7 | 1810.5 |
| 165°   | 1833.5 | 1825.5 | 1829.5 | 1839.0 | 1829.5 |
| 167.5° | 1848.5 | 1840.2 | 1844.4 | 1853.9 | 1841.7 |
| 170°   | 1860.7 | 1852.5 | 1855.2 | 1864.7 | 1852.5 |
| 172.5° | 1868.8 | 1860.7 | 1863.4 | 1872.9 | 1860.7 |
| 175°   | 1875.5 | 1866.0 | 1868.8 | 1878.2 | 1864.7 |
| 177.5° | 1878.2 | 1868.8 | 1870.2 | 1879.7 | 1867.4 |
| 180°   | 1871.4 | 1871.4 | 1871.4 | 1871.4 | 1871.4 |

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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 | 10.13            | 10.93 | 11.13 | 11.94 | 13.26 | 6.11           | 6.91 | 7.10  | 7.91  | 9.24  |
|                 | 3H   | 11.80            | 12.52 | 12.81 | 13.53 | 14.87 | 7.29           | 8.01 | 8.30  | 9.02  | 10.37 |
|                 | 4H   | 12.40            | 13.08 | 13.42 | 14.09 | 15.45 | 7.74           | 8.41 | 8.76  | 9.43  | 10.78 |
|                 | 6H   | 12.82            | 13.44 | 13.84 | 14.46 | 15.83 | 8.05           | 8.68 | 9.08  | 9.69  | 11.06 |
|                 | 8H   | 12.94            | 13.53 | 13.97 | 14.57 | 15.93 | 8.14           | 8.73 | 9.17  | 9.77  | 11.13 |
|                 | 12H  | 13.00            | 13.56 | 14.03 | 14.59 | 15.97 | 8.18           | 8.74 | 9.22  | 9.77  | 11.16 |
| 4H              | 2H   | 10.15            | 10.82 | 11.17 | 11.84 | 13.19 | 6.70           | 7.37 | 7.72  | 8.39  | 9.74  |
|                 | 3H   | 11.96            | 12.53 | 13.00 | 13.57 | 14.94 | 8.04           | 8.60 | 9.07  | 9.64  | 11.01 |
|                 | 4H   | 12.65            | 13.16 | 13.69 | 14.20 | 15.59 | 8.58           | 9.10 | 9.62  | 10.13 | 11.52 |
|                 | 6H   | 13.15            | 13.60 | 14.21 | 14.65 | 16.04 | 8.99           | 9.44 | 10.04 | 10.49 | 11.88 |
|                 | 8H   | 13.33            | 13.74 | 14.38 | 14.79 | 16.19 | 9.12           | 9.53 | 10.17 | 10.58 | 11.99 |
|                 | 12H  | 13.41            | 13.79 | 14.48 | 14.85 | 16.26 | 9.18           | 9.55 | 10.25 | 10.62 | 12.03 |
| 8H              | 4H   | 12.61            | 13.03 | 13.66 | 14.08 | 15.48 | 8.85           | 9.27 | 9.91  | 10.32 | 11.72 |
|                 | 6H   | 13.17            | 13.51 | 14.24 | 14.60 | 16.00 | 9.37           | 9.71 | 10.44 | 10.80 | 12.20 |
|                 | 8H   | 13.38            | 13.68 | 14.46 | 14.76 | 16.18 | 9.55           | 9.85 | 10.63 | 10.93 | 12.35 |
|                 | 12H  | 13.51            | 13.78 | 14.60 | 14.85 | 16.31 | 9.67           | 9.93 | 10.75 | 11.00 | 12.46 |
| 12H             | 4H   | 12.56            | 12.94 | 13.63 | 14.00 | 15.41 | 8.86           | 9.23 | 9.93  | 10.29 | 11.70 |
|                 | 6H   | 13.14            | 13.44 | 14.23 | 14.52 | 15.94 | 9.41           | 9.71 | 10.49 | 10.79 | 12.21 |
|                 | 8H   | 13.36            | 13.62 | 14.44 | 14.69 | 16.15 | 9.62           | 9.88 | 10.70 | 10.95 | 12.41 |