

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: P925333

Luminaire Tested: DFN2DIP-SQ2F0-040D070US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925333  
REPORT IS A COMBINATION OF REPORTS P901341 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-040D070US950-FLLONL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

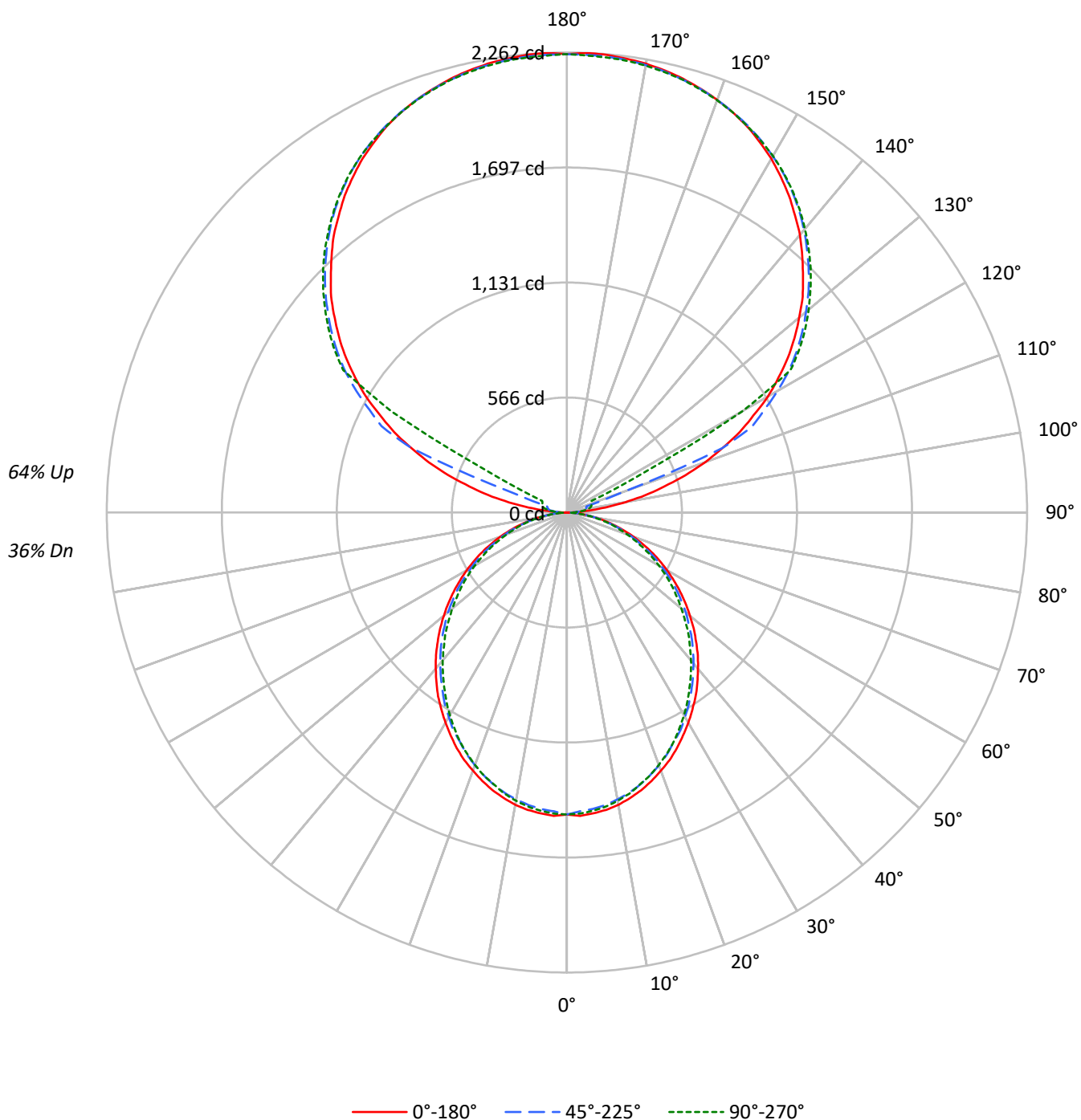
Lumens per Lamp: N/A  
Luminaire Lumens: 10389.0 lumens  
Efficiency: N/A  
Efficacy: 117.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 88.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 44 | 44 | 44 |
| 1   | 95  | 90  | 87  | 83  | 86 | 82 | 79 | 76 | 66 | 64 | 62 | 52 | 50 | 49 | 39 | 38 | 37 |
| 2   | 86  | 79  | 73  | 68  | 78 | 72 | 67 | 62 | 58 | 54 | 51 | 46 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 69  | 62  | 57  | 71 | 63 | 57 | 52 | 51 | 47 | 43 | 40 | 37 | 35 | 30 | 28 | 26 |
| 4   | 72  | 61  | 54  | 48  | 65 | 56 | 49 | 44 | 45 | 41 | 37 | 36 | 32 | 30 | 27 | 25 | 23 |
| 5   | 66  | 55  | 47  | 41  | 59 | 50 | 43 | 38 | 41 | 35 | 32 | 32 | 28 | 26 | 24 | 22 | 20 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 37 | 31 | 27 | 29 | 25 | 22 | 22 | 19 | 17 |
| 7   | 56  | 44  | 36  | 31  | 51 | 40 | 33 | 29 | 33 | 28 | 24 | 26 | 23 | 20 | 20 | 17 | 15 |
| 8   | 52  | 40  | 32  | 27  | 47 | 37 | 30 | 25 | 30 | 25 | 21 | 24 | 20 | 18 | 18 | 16 | 14 |
| 9   | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 22 | 28 | 23 | 19 | 22 | 18 | 16 | 17 | 14 | 12 |
| 10  | 45  | 33  | 26  | 21  | 41 | 31 | 24 | 20 | 25 | 20 | 17 | 20 | 17 | 14 | 16 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3265 | 3265 | 3265 |
| 5°  | 3264 | 3212 | 3237 |
| 10° | 3232 | 3162 | 3188 |
| 15° | 3179 | 3103 | 3115 |
| 20° | 3109 | 3023 | 3041 |
| 25° | 3040 | 2930 | 2955 |
| 30° | 2954 | 2842 | 2848 |
| 35° | 2872 | 2740 | 2734 |
| 40° | 2772 | 2637 | 2626 |
| 45° | 2672 | 2533 | 2515 |
| 50° | 2563 | 2423 | 2386 |
| 55° | 2448 | 2297 | 2268 |
| 60° | 2317 | 2148 | 2131 |
| 65° | 2174 | 1993 | 1971 |
| 70° | 1992 | 1804 | 1797 |
| 75° | 1743 | 1576 | 1630 |
| 80° | 1439 | 1286 | 1324 |
| 85° | 973  | 812  | 832  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2672 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 139.8   | 1.3       |
| 10°-20°   | 393.2   | 3.8       |
| 20°-30°   | 577.9   | 5.6       |
| 30°-40°   | 671.2   | 6.5       |
| 40°-50°   | 670.3   | 6.5       |
| 50°-60°   | 584.5   | 5.6       |
| 60°-70°   | 432.1   | 4.2       |
| 70°-80°   | 244.5   | 2.4       |
| 80°-90°   | 68.5    | 0.7       |
| 90°-100°  | 74.3    | 0.7       |
| 100°-110° | 277.0   | 2.7       |
| 110°-120° | 734.8   | 7.1       |
| 120°-130° | 1218.6  | 11.7      |
| 130°-140° | 1294.5  | 12.5      |
| 140°-150° | 1203.1  | 11.6      |
| 150°-160° | 967.2   | 9.3       |
| 160°-170° | 623.3   | 6.0       |
| 170°-180° | 214.5   | 2.1       |
| 0°-30°    | 1110.8  | 10.7      |
| 0°-40°    | 1782.0  | 17.2      |
| 0°-60°    | 3036.8  | 29.2      |
| 0°-90°    | 3781.8  | 36.4      |
| 90°-120°  | 1086.1  | 10.5      |
| 90°-150°  | 4802.2  | 46.2      |
| 90°-180°  | 6607.0  | 63.6      |
| 0°-180°   | 10389.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1485 | 1485  | 1485 | 1485  | 1485 |      |
| 5°   | 1485 | 1479  | 1463 | 1475  | 1472 | 141  |
| 15°  | 1413 | 1405  | 1386 | 1392  | 1385 | 398  |
| 25°  | 1279 | 1268  | 1244 | 1246  | 1244 | 589  |
| 35°  | 1104 | 1090  | 1067 | 1058  | 1051 | 689  |
| 45°  | 898  | 888   | 867  | 851   | 845  | 693  |
| 55°  | 680  | 671   | 654  | 637   | 630  | 608  |
| 65°  | 458  | 450   | 436  | 423   | 416  | 453  |
| 75°  | 240  | 237   | 230  | 221   | 224  | 256  |
| 85°  | 58   | 57    | 56   | 51    | 50   | 65   |
| 90°  | 2    | 20    | 32   | 41    | 44   | 10   |
| 95°  | 106  | 52    | 64   | 72    | 70   | 125  |
| 105° | 496  | 545   | 100  | 117   | 124  | 530  |
| 115° | 938  | 965   | 1006 | 251   | 134  | 923  |
| 125° | 1326 | 1347  | 1378 | 1390  | 1394 | 1182 |
| 135° | 1641 | 1667  | 1681 | 1698  | 1694 | 1267 |
| 145° | 1903 | 1902  | 1929 | 1941  | 1932 | 1190 |
| 155° | 2096 | 2081  | 2100 | 2110  | 2097 | 966  |
| 165° | 2208 | 2198  | 2203 | 2215  | 2203 | 624  |
| 175° | 2259 | 2247  | 2250 | 2262  | 2246 | 215  |
| 180° | 2254 | 2254  | 2254 | 2254  | 2254 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1484.8 | 1484.8 | 1484.8 | 1484.8 | 1484.8 |
| 2.5°   | 1493.5 | 1486.3 | 1470.6 | 1484.8 | 1482.1 |
| 5°     | 1484.8 | 1479.2 | 1463.4 | 1474.8 | 1472.1 |
| 7.5°   | 1474.8 | 1466.3 | 1450.6 | 1462.1 | 1459.2 |
| 10°    | 1459.2 | 1449.2 | 1432.1 | 1443.5 | 1439.2 |
| 12.5°  | 1437.7 | 1429.2 | 1412.1 | 1419.3 | 1416.3 |
| 15°    | 1413.4 | 1405.0 | 1386.4 | 1392.1 | 1385.0 |
| 17.5°  | 1383.5 | 1375.0 | 1356.4 | 1363.5 | 1356.4 |
| 20°    | 1350.6 | 1342.1 | 1322.1 | 1326.3 | 1320.8 |
| 22.5°  | 1317.9 | 1305.0 | 1286.4 | 1286.4 | 1283.5 |
| 25°    | 1279.2 | 1267.9 | 1243.6 | 1246.4 | 1243.6 |
| 27.5°  | 1236.4 | 1226.4 | 1208.0 | 1203.7 | 1196.6 |
| 30°    | 1193.6 | 1182.2 | 1160.8 | 1156.5 | 1150.8 |
| 32.5°  | 1147.9 | 1139.5 | 1116.6 | 1108.0 | 1102.2 |
| 35°    | 1103.7 | 1089.5 | 1066.6 | 1058.0 | 1050.8 |
| 37.5°  | 1053.7 | 1040.8 | 1017.9 | 1008.0 | 1000.8 |
| 40°    | 1002.4 | 990.8  | 967.9  | 955.2  | 949.5  |
| 42.5°  | 952.4  | 940.8  | 918.1  | 903.7  | 895.2  |
| 45°    | 898.1  | 888.2  | 866.6  | 851.1  | 845.2  |
| 47.5°  | 845.2  | 835.2  | 812.4  | 796.7  | 788.2  |
| 50°    | 789.5  | 782.4  | 762.4  | 742.4  | 735.2  |
| 52.5°  | 735.2  | 725.3  | 706.8  | 691.1  | 681.1  |
| 55°    | 679.7  | 671.0  | 654.0  | 636.8  | 629.7  |
| 57.5°  | 623.9  | 616.9  | 598.2  | 581.1  | 575.4  |
| 60°    | 568.2  | 562.6  | 542.6  | 526.9  | 522.6  |
| 62.5°  | 514.0  | 504.0  | 489.8  | 475.5  | 469.7  |
| 65°    | 458.4  | 449.7  | 435.5  | 422.6  | 415.6  |
| 67.5°  | 401.3  | 394.0  | 381.3  | 371.3  | 365.6  |
| 70°    | 348.4  | 342.7  | 329.8  | 319.8  | 314.2  |
| 72.5°  | 294.2  | 288.4  | 281.3  | 271.3  | 267.0  |
| 75°    | 239.8  | 237.1  | 229.8  | 221.3  | 224.2  |
| 77.5°  | 191.3  | 185.6  | 182.7  | 178.4  | 174.2  |
| 80°    | 142.8  | 141.3  | 138.4  | 134.2  | 131.4  |
| 82.5°  | 97.1   | 97.1   | 95.8   | 90.0   | 90.0   |
| 85°    | 58.5   | 57.1   | 55.7   | 51.3   | 50.0   |
| 87.5°  | 25.8   | 22.9   | 20.0   | 15.7   | 14.2   |
| 90°    | 1.5    | 19.6   | 32.5   | 40.8   | 44.0   |
| 92.5°  | 40.8   | 34.2   | 39.1   | 42.5   | 44.0   |
| 95°    | 105.9  | 52.1   | 63.5   | 71.8   | 70.1   |
| 97.5°  | 190.7  | 57.1   | 83.1   | 88.1   | 89.7   |
| 100°   | 288.8  | 65.3   | 92.9   | 105.9  | 109.2  |
| 102.5° | 396.2  | 393.1  | 96.3   | 114.1  | 119.1  |
| 105°   | 495.8  | 544.7  | 99.5   | 117.3  | 123.9  |
| 107.5° | 611.5  | 652.2  | 102.8  | 120.7  | 127.3  |
| 110°   | 722.6  | 756.6  | 285.4  | 122.4  | 128.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 826.9  | 856.1  | 828.5  | 125.5  | 130.5  |
| 115°   | 937.7  | 965.4  | 1006.2 | 251.2  | 133.8  |
| 117.5° | 1033.9 | 1066.5 | 1094.3 | 861.0  | 433.8  |
| 120°   | 1141.6 | 1166.0 | 1195.5 | 1215.0 | 994.8  |
| 122.5° | 1232.8 | 1258.9 | 1291.7 | 1301.4 | 1303.1 |
| 125°   | 1325.8 | 1347.0 | 1378.1 | 1389.5 | 1394.3 |
| 127.5° | 1410.6 | 1433.4 | 1458.0 | 1474.3 | 1475.8 |
| 130°   | 1490.5 | 1516.7 | 1534.5 | 1552.5 | 1551.0 |
| 132.5° | 1572.1 | 1593.4 | 1611.2 | 1625.9 | 1624.4 |
| 135°   | 1640.6 | 1666.7 | 1681.3 | 1697.7 | 1694.5 |
| 137.5° | 1712.2 | 1731.9 | 1748.3 | 1764.6 | 1759.7 |
| 140°   | 1782.4 | 1795.5 | 1813.4 | 1828.1 | 1819.9 |
| 142.5° | 1841.2 | 1852.7 | 1873.8 | 1886.7 | 1878.6 |
| 145°   | 1903.2 | 1901.5 | 1929.2 | 1940.6 | 1932.5 |
| 147.5° | 1956.8 | 1952.1 | 1979.7 | 1987.8 | 1981.5 |
| 150°   | 2009.1 | 1997.8 | 2023.9 | 2033.5 | 2025.4 |
| 152.5° | 2053.1 | 2040.1 | 2064.6 | 2074.4 | 2063.0 |
| 155°   | 2095.6 | 2081.0 | 2100.5 | 2110.2 | 2097.3 |
| 157.5° | 2129.8 | 2116.8 | 2131.5 | 2143.0 | 2129.8 |
| 160°   | 2159.3 | 2149.4 | 2159.3 | 2168.9 | 2157.5 |
| 162.5° | 2185.2 | 2175.5 | 2183.6 | 2195.1 | 2180.4 |
| 165°   | 2208.0 | 2198.4 | 2203.2 | 2214.6 | 2203.2 |
| 167.5° | 2226.1 | 2216.1 | 2221.2 | 2232.6 | 2218.0 |
| 170°   | 2240.8 | 2230.9 | 2234.2 | 2245.6 | 2230.9 |
| 172.5° | 2250.5 | 2240.8 | 2244.1 | 2255.4 | 2240.8 |
| 175°   | 2258.6 | 2247.1 | 2250.5 | 2261.8 | 2245.6 |
| 177.5° | 2261.8 | 2250.5 | 2252.2 | 2263.7 | 2248.9 |
| 180°   | 2253.7 | 2253.7 | 2253.7 | 2253.7 | 2253.7 |

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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 | 9.86             | 10.61 | 10.93 | 11.68 | 13.13 | 9.42           | 10.17 | 10.48 | 11.24 | 12.69 |
|                 | 3H   | 11.49            | 12.17 | 12.57 | 13.24 | 14.72 | 11.00          | 11.68 | 12.08 | 12.75 | 14.23 |
|                 | 4H   | 12.06            | 12.70 | 13.15 | 13.78 | 15.26 | 11.57          | 12.21 | 12.66 | 13.29 | 14.76 |
|                 | 6H   | 12.44            | 13.03 | 13.54 | 14.11 | 15.60 | 11.94          | 12.53 | 13.04 | 13.61 | 15.10 |
|                 | 8H   | 12.54            | 13.10 | 13.64 | 14.19 | 15.68 | 12.04          | 12.59 | 13.14 | 13.69 | 15.18 |
|                 | 12H  | 12.57            | 13.11 | 13.68 | 14.20 | 15.70 | 12.07          | 12.60 | 13.17 | 13.69 | 15.20 |
| 4H              | 2H   | 10.30            | 10.94 | 11.39 | 12.02 | 13.49 | 9.94           | 10.58 | 11.04 | 11.66 | 13.14 |
|                 | 3H   | 12.13            | 12.66 | 13.23 | 13.77 | 15.26 | 11.72          | 12.26 | 12.82 | 13.36 | 14.85 |
|                 | 4H   | 12.83            | 13.31 | 13.93 | 14.41 | 15.92 | 12.40          | 12.89 | 13.51 | 13.99 | 15.50 |
|                 | 6H   | 13.32            | 13.74 | 14.43 | 14.85 | 16.36 | 12.88          | 13.30 | 14.00 | 14.42 | 15.93 |
|                 | 8H   | 13.45            | 13.84 | 14.57 | 14.96 | 16.48 | 13.02          | 13.41 | 14.13 | 14.52 | 16.04 |
|                 | 12H  | 13.51            | 13.87 | 14.64 | 14.99 | 16.51 | 13.06          | 13.42 | 14.19 | 14.54 | 16.07 |
| 8H              | 4H   | 13.00            | 13.39 | 14.11 | 14.50 | 16.02 | 12.62          | 13.02 | 13.74 | 14.13 | 15.65 |
|                 | 6H   | 13.60            | 13.93 | 14.74 | 15.08 | 16.60 | 13.22          | 13.54 | 14.35 | 14.70 | 16.21 |
|                 | 8H   | 13.81            | 14.09 | 14.95 | 15.23 | 16.76 | 13.42          | 13.70 | 14.56 | 14.83 | 16.37 |
|                 | 12H  | 13.92            | 14.17 | 15.07 | 15.30 | 16.88 | 13.51          | 13.76 | 14.66 | 14.89 | 16.47 |
| 12H             | 4H   | 12.98            | 13.33 | 14.11 | 14.46 | 15.98 | 12.61          | 12.96 | 13.74 | 14.09 | 15.61 |
|                 | 6H   | 13.63            | 13.91 | 14.77 | 15.04 | 16.58 | 13.25          | 13.54 | 14.39 | 14.67 | 16.21 |
|                 | 8H   | 13.85            | 14.10 | 14.99 | 15.23 | 16.80 | 13.47          | 13.72 | 14.61 | 14.85 | 16.42 |