

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: P918039

Luminaire Tested: DFN2DIP-TR3F0-040D060US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918039  
REPORT IS A COMBINATION OF REPORTS P901835 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-040D060US930-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

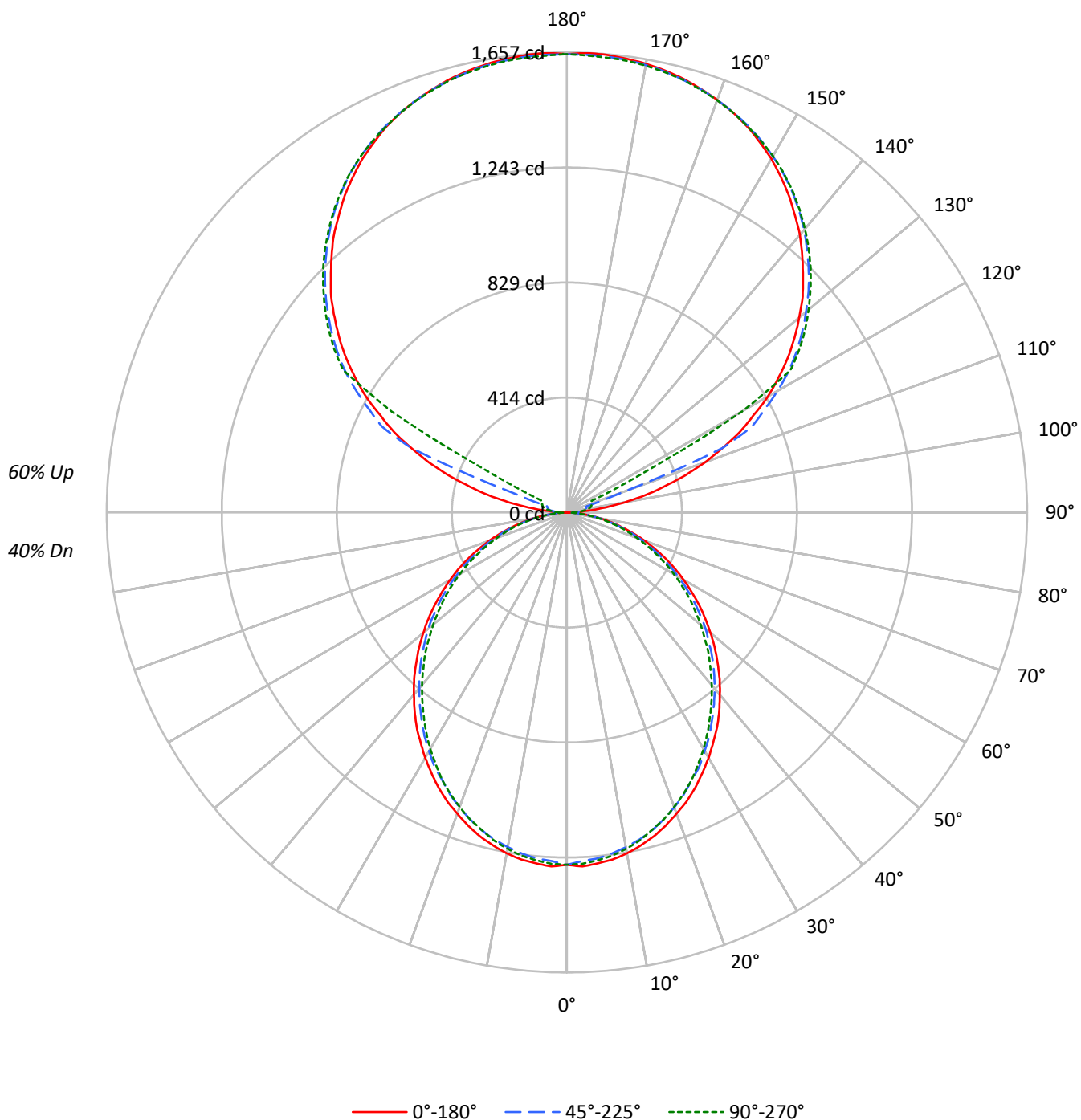
Lumens per Lamp: N/A  
Luminaire Lumens: 8071.4 lumens  
Efficiency: N/A  
Efficacy: 100.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 80.1  
Input Voltage (V): 120  
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



TEST NUMBER: P918039

CATALOG NUMBER: DFN2DIP-TR3F0-040D060US930-FLONL

**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 | 78 | 78 | 78 | 62 | 62 | 62 | 47 | 47 | 47 |
| 1   | 96  | 91  | 87  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 41 | 40 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 60 | 56 | 53 | 48 | 45 | 43 | 37 | 35 | 33 |
| 3   | 79  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 48 | 44 | 42 | 39 | 36 | 32 | 30 | 28 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 37 | 34 | 31 | 29 | 26 | 24 |
| 5   | 67  | 55  | 47  | 41  | 60 | 50 | 44 | 38 | 42 | 37 | 33 | 34 | 30 | 27 | 26 | 23 | 21 |
| 6   | 61  | 49  | 41  | 36  | 56 | 45 | 38 | 33 | 38 | 32 | 28 | 30 | 26 | 23 | 24 | 21 | 19 |
| 7   | 57  | 45  | 37  | 31  | 51 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 52  | 40  | 33  | 27  | 48 | 37 | 30 | 26 | 31 | 26 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 18 | 15 | 13 |
| 10  | 46  | 34  | 27  | 22  | 41 | 31 | 25 | 20 | 26 | 21 | 18 | 21 | 18 | 15 | 17 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1581 | 1581 | 1581 |
| 5°  | 1583 | 1558 | 1569 |
| 10° | 1569 | 1536 | 1546 |
| 15° | 1545 | 1509 | 1512 |
| 20° | 1513 | 1472 | 1477 |
| 25° | 1481 | 1429 | 1437 |
| 30° | 1441 | 1389 | 1386 |
| 35° | 1404 | 1341 | 1332 |
| 40° | 1357 | 1293 | 1281 |
| 45° | 1311 | 1245 | 1228 |
| 50° | 1260 | 1195 | 1167 |
| 55° | 1207 | 1136 | 1111 |
| 60° | 1147 | 1067 | 1047 |
| 65° | 1082 | 995  | 971  |
| 70° | 998  | 907  | 889  |
| 75° | 883  | 801  | 812  |
| 80° | 743  | 667  | 667  |
| 85° | 525  | 439  | 431  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1311 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 119.4  | 1.5       |
| 10°-20°   | 336.0  | 4.2       |
| 20°-30°   | 493.8  | 6.1       |
| 30°-40°   | 573.6  | 7.1       |
| 40°-50°   | 572.9  | 7.1       |
| 50°-60°   | 499.5  | 6.2       |
| 60°-70°   | 369.3  | 4.6       |
| 70°-80°   | 208.9  | 2.6       |
| 80°-90°   | 58.0   | 0.7       |
| 90°-100°  | 54.4   | 0.7       |
| 100°-110° | 202.9  | 2.5       |
| 110°-120° | 538.2  | 6.7       |
| 120°-130° | 892.7  | 11.1      |
| 130°-140° | 948.2  | 11.7      |
| 140°-150° | 881.3  | 10.9      |
| 150°-160° | 708.5  | 8.8       |
| 160°-170° | 456.5  | 5.7       |
| 170°-180° | 157.1  | 1.9       |
| 0°-30°    | 949.3  | 11.8      |
| 0°-40°    | 1522.9 | 18.9      |
| 0°-60°    | 2595.3 | 32.2      |
| 0°-90°    | 3231.5 | 40.0      |
| 90°-120°  | 795.6  | 9.9       |
| 90°-150°  | 3517.8 | 43.6      |
| 90°-180°  | 4840.0 | 60.0      |
| 0°-180°   | 8071.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1269 | 1269  | 1269 | 1269  | 1269 |      |
| 5°   | 1269 | 1264  | 1251 | 1260  | 1258 | 120  |
| 15°  | 1208 | 1201  | 1185 | 1190  | 1184 | 340  |
| 25°  | 1093 | 1084  | 1063 | 1065  | 1063 | 503  |
| 35°  | 943  | 931   | 912  | 904   | 898  | 589  |
| 45°  | 768  | 759   | 741  | 727   | 722  | 592  |
| 55°  | 581  | 574   | 559  | 544   | 538  | 519  |
| 65°  | 392  | 384   | 372  | 361   | 355  | 387  |
| 75°  | 205  | 203   | 196  | 189   | 192  | 219  |
| 85°  | 50   | 49    | 48   | 44    | 43   | 56   |
| 90°  | 1    | 14    | 24   | 30    | 32   | 7    |
| 95°  | 78   | 38    | 47   | 53    | 51   | 92   |
| 105° | 363  | 399   | 73   | 86    | 91   | 388  |
| 115° | 687  | 707   | 737  | 184   | 98   | 676  |
| 125° | 971  | 987   | 1009 | 1018  | 1021 | 866  |
| 135° | 1202 | 1221  | 1232 | 1244  | 1241 | 928  |
| 145° | 1394 | 1393  | 1413 | 1422  | 1416 | 872  |
| 155° | 1535 | 1524  | 1539 | 1546  | 1536 | 707  |
| 165° | 1618 | 1610  | 1614 | 1622  | 1614 | 457  |
| 175° | 1654 | 1646  | 1648 | 1657  | 1645 | 157  |
| 180° | 1651 | 1651  | 1651 | 1651  | 1651 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1268.9 | 1268.9 | 1268.9 | 1268.9 | 1268.9 |
| 2.5°   | 1276.3 | 1270.2 | 1256.8 | 1268.9 | 1266.6 |
| 5°     | 1268.9 | 1264.1 | 1250.7 | 1260.4 | 1258.1 |
| 7.5°   | 1260.4 | 1253.1 | 1239.7 | 1249.5 | 1247.1 |
| 10°    | 1247.1 | 1238.5 | 1223.9 | 1233.6 | 1230.0 |
| 12.5°  | 1228.7 | 1221.4 | 1206.8 | 1212.9 | 1210.4 |
| 15°    | 1207.9 | 1200.7 | 1184.8 | 1189.7 | 1183.6 |
| 17.5°  | 1182.3 | 1175.1 | 1159.2 | 1165.2 | 1159.2 |
| 20°    | 1154.2 | 1147.0 | 1129.9 | 1133.5 | 1128.8 |
| 22.5°  | 1126.3 | 1115.2 | 1099.3 | 1099.3 | 1096.9 |
| 25°    | 1093.2 | 1083.5 | 1062.8 | 1065.2 | 1062.8 |
| 27.5°  | 1056.6 | 1048.1 | 1032.3 | 1028.7 | 1022.6 |
| 30°    | 1020.1 | 1010.3 | 992.1  | 988.4  | 983.5  |
| 32.5°  | 981.0  | 973.8  | 954.2  | 946.9  | 941.9  |
| 35°    | 943.2  | 931.1  | 911.5  | 904.2  | 898.1  |
| 37.5°  | 900.5  | 889.5  | 869.9  | 861.4  | 855.3  |
| 40°    | 856.6  | 846.8  | 827.2  | 816.4  | 811.5  |
| 42.5°  | 813.9  | 804.0  | 784.6  | 772.3  | 765.1  |
| 45°    | 767.5  | 759.0  | 740.6  | 727.3  | 722.4  |
| 47.5°  | 722.4  | 713.8  | 694.3  | 680.9  | 673.6  |
| 50°    | 674.7  | 668.6  | 651.6  | 634.5  | 628.4  |
| 52.5°  | 628.4  | 619.9  | 604.1  | 590.6  | 582.0  |
| 55°    | 580.9  | 573.5  | 558.9  | 544.2  | 538.2  |
| 57.5°  | 533.2  | 527.2  | 511.2  | 496.6  | 491.7  |
| 60°    | 485.6  | 480.8  | 463.7  | 450.3  | 446.6  |
| 62.5°  | 439.3  | 430.7  | 418.6  | 406.3  | 401.5  |
| 65°    | 391.8  | 384.3  | 372.2  | 361.2  | 355.1  |
| 67.5°  | 342.9  | 336.7  | 325.9  | 317.3  | 312.4  |
| 70°    | 297.7  | 292.9  | 281.8  | 273.3  | 268.5  |
| 72.5°  | 251.4  | 246.5  | 240.4  | 231.9  | 228.2  |
| 75°    | 205.0  | 202.6  | 196.4  | 189.1  | 191.6  |
| 77.5°  | 163.5  | 158.6  | 156.1  | 152.5  | 148.9  |
| 80°    | 122.1  | 120.7  | 118.3  | 114.7  | 112.3  |
| 82.5°  | 83.0   | 83.0   | 81.9   | 76.9   | 76.9   |
| 85°    | 50.0   | 48.8   | 47.6   | 43.9   | 42.7   |
| 87.5°  | 22.0   | 19.6   | 17.1   | 13.5   | 12.1   |
| 90°    | 1.1    | 14.3   | 23.8   | 29.9   | 32.2   |
| 92.5°  | 29.9   | 25.1   | 28.6   | 31.1   | 32.2   |
| 95°    | 77.6   | 38.2   | 46.6   | 52.7   | 51.4   |
| 97.5°  | 139.7  | 41.8   | 60.8   | 64.6   | 65.7   |
| 100°   | 211.5  | 47.8   | 68.1   | 77.6   | 80.0   |
| 102.5° | 290.2  | 288.0  | 70.5   | 83.6   | 87.2   |
| 105°   | 363.1  | 399.0  | 72.9   | 85.9   | 90.8   |
| 107.5° | 448.0  | 477.8  | 75.3   | 88.4   | 93.2   |
| 110°   | 529.3  | 554.2  | 209.1  | 89.7   | 94.3   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 605.7  | 627.1  | 606.8  | 91.9   | 95.6   |
| 115°   | 686.9  | 707.2  | 737.1  | 184.0  | 98.0   |
| 117.5° | 757.3  | 781.2  | 801.6  | 630.7  | 317.7  |
| 120°   | 836.3  | 854.1  | 875.7  | 890.0  | 728.7  |
| 122.5° | 903.0  | 922.2  | 946.2  | 953.2  | 954.6  |
| 125°   | 971.2  | 986.8  | 1009.4 | 1017.8 | 1021.3 |
| 127.5° | 1033.3 | 1050.0 | 1068.0 | 1079.9 | 1081.1 |
| 130°   | 1091.8 | 1111.0 | 1124.1 | 1137.3 | 1136.1 |
| 132.5° | 1151.6 | 1167.2 | 1180.2 | 1191.0 | 1189.8 |
| 135°   | 1201.8 | 1221.0 | 1231.6 | 1243.7 | 1241.2 |
| 137.5° | 1254.3 | 1268.6 | 1280.7 | 1292.6 | 1289.1 |
| 140°   | 1305.6 | 1315.3 | 1328.4 | 1339.1 | 1333.2 |
| 142.5° | 1348.7 | 1357.1 | 1372.6 | 1382.1 | 1376.1 |
| 145°   | 1394.2 | 1392.9 | 1413.2 | 1421.6 | 1415.6 |
| 147.5° | 1433.5 | 1429.9 | 1450.2 | 1456.1 | 1451.5 |
| 150°   | 1471.8 | 1463.4 | 1482.5 | 1489.6 | 1483.7 |
| 152.5° | 1504.0 | 1494.4 | 1512.3 | 1519.6 | 1511.2 |
| 155°   | 1535.0 | 1524.4 | 1538.7 | 1545.8 | 1536.3 |
| 157.5° | 1560.2 | 1550.6 | 1561.4 | 1569.8 | 1560.2 |
| 160°   | 1581.7 | 1574.4 | 1581.7 | 1588.8 | 1580.5 |
| 162.5° | 1600.7 | 1593.6 | 1599.5 | 1607.9 | 1597.2 |
| 165°   | 1617.5 | 1610.4 | 1613.9 | 1622.3 | 1613.9 |
| 167.5° | 1630.6 | 1623.4 | 1627.1 | 1635.5 | 1624.6 |
| 170°   | 1641.4 | 1634.2 | 1636.6 | 1644.9 | 1634.2 |
| 172.5° | 1648.5 | 1641.4 | 1643.8 | 1652.2 | 1641.4 |
| 175°   | 1654.5 | 1646.1 | 1648.5 | 1656.8 | 1644.9 |
| 177.5° | 1656.8 | 1648.5 | 1649.8 | 1658.2 | 1647.4 |
| 180°   | 1650.9 | 1650.9 | 1650.9 | 1650.9 | 1650.9 |

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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 | 7.82             | 8.59  | 8.85  | 9.64  | 11.04 | 7.39           | 8.16  | 8.42  | 9.21  | 10.62 |
|                 | 3H   | 9.46             | 10.16 | 10.51 | 11.21 | 12.64 | 8.99           | 9.69  | 10.04 | 10.74 | 12.17 |
|                 | 4H   | 10.04            | 10.70 | 11.10 | 11.75 | 13.19 | 9.57           | 10.23 | 10.63 | 11.29 | 12.72 |
|                 | 6H   | 10.43            | 11.03 | 11.50 | 12.09 | 13.54 | 9.96           | 10.57 | 11.03 | 11.62 | 13.07 |
|                 | 8H   | 10.52            | 11.10 | 11.60 | 12.18 | 13.62 | 10.06          | 10.64 | 11.13 | 11.71 | 13.15 |
|                 | 12H  | 10.57            | 11.12 | 11.65 | 12.19 | 13.65 | 10.09          | 10.64 | 11.17 | 11.71 | 13.18 |
| 4H              | 2H   | 8.26             | 8.92  | 9.33  | 9.98  | 11.41 | 7.92           | 8.58  | 8.99  | 9.64  | 11.07 |
|                 | 3H   | 10.11            | 10.66 | 11.18 | 11.75 | 13.19 | 9.72           | 10.27 | 10.80 | 11.36 | 12.80 |
|                 | 4H   | 10.81            | 11.32 | 11.89 | 12.39 | 13.86 | 10.41          | 10.92 | 11.49 | 11.99 | 13.46 |
|                 | 6H   | 11.32            | 11.75 | 12.40 | 12.85 | 14.31 | 10.91          | 11.35 | 12.00 | 12.44 | 13.90 |
|                 | 8H   | 11.46            | 11.86 | 12.55 | 12.95 | 14.43 | 11.05          | 11.46 | 12.14 | 12.55 | 14.02 |
|                 | 12H  | 11.52            | 11.89 | 12.63 | 12.99 | 14.48 | 11.11          | 11.48 | 12.21 | 12.58 | 14.06 |
| 8H              | 4H   | 11.00            | 11.41 | 12.09 | 12.50 | 13.97 | 10.64          | 11.05 | 11.73 | 12.14 | 13.62 |
|                 | 6H   | 11.62            | 11.95 | 12.73 | 13.08 | 14.56 | 11.26          | 11.59 | 12.37 | 12.72 | 14.20 |
|                 | 8H   | 11.83            | 12.12 | 12.95 | 13.24 | 14.73 | 11.47          | 11.76 | 12.58 | 12.87 | 14.37 |
|                 | 12H  | 11.95            | 12.21 | 13.07 | 13.32 | 14.85 | 11.57          | 11.83 | 12.70 | 12.94 | 14.47 |
| 12H             | 4H   | 10.98            | 11.35 | 12.09 | 12.45 | 13.93 | 10.63          | 11.00 | 11.74 | 12.10 | 13.58 |
|                 | 6H   | 11.64            | 11.94 | 12.76 | 13.05 | 14.55 | 11.30          | 11.59 | 12.41 | 12.70 | 14.20 |
|                 | 8H   | 11.88            | 12.13 | 13.00 | 13.24 | 14.77 | 11.52          | 11.78 | 12.64 | 12.89 | 14.42 |