

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: P911194

Luminaire Tested: DFN2DIP-PN3F0-050D040US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

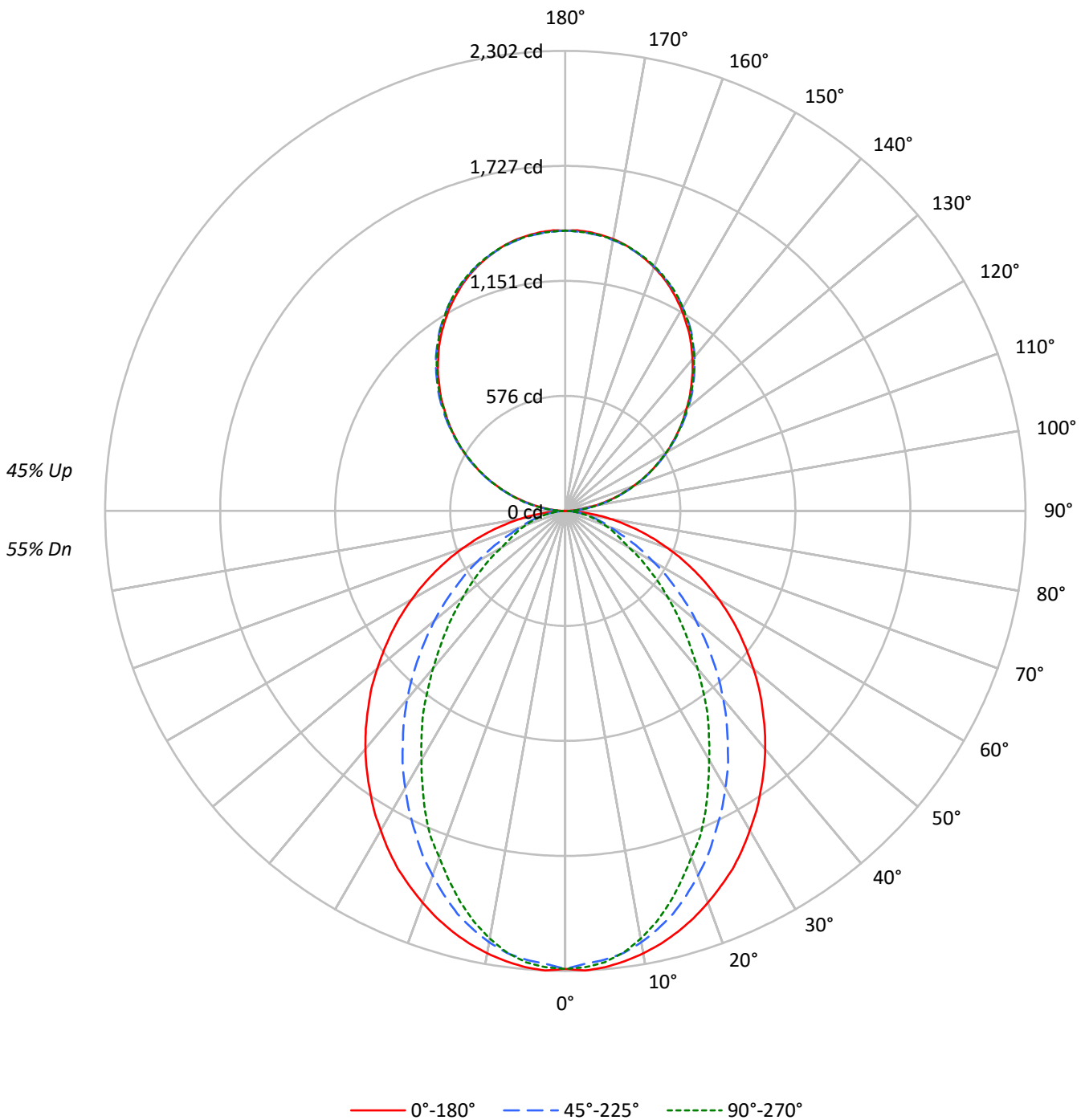
Test Method: LM-79-2019  
Report Number: P911194  
REPORT IS A COMBINATION OF REPORTS P899530 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D040US850-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8639.1 lumens  
Efficiency: N/A  
Efficacy: 115.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 75  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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: P911194

CATALOG NUMBER: DFN2DIP-PN3F0-050D040US850-RLLFLL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 | 55 |    |    |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 54 | 53 | 52 | 47 |    |    |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 67 | 63 | 60 | 57 | 55 | 52 | 48 | 46 | 45 | 40 |    |    |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 51 | 48 | 45 | 43 | 41 | 39 | 35 |    |    |
| 4   | 76  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 48 | 44 | 46 | 42 | 39 | 39 | 36 | 34 | 30 |    |    |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 38 | 42 | 37 | 34 | 35 | 32 | 30 | 27 |    |    |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 33 | 30 | 32 | 29 | 26 | 24 |    |    |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 26 | 24 | 21 |    |    |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 32 | 27 | 24 | 27 | 24 | 21 | 19 |    |    |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 | 17 |    |    |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 28  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 | 16 |    |    |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2679 | 2679 | 2679 |
| 5°  | 2682 | 2635 | 2652 |
| 10° | 2654 | 2581 | 2565 |
| 15° | 2615 | 2494 | 2430 |
| 20° | 2566 | 2375 | 2266 |
| 25° | 2514 | 2241 | 2107 |
| 30° | 2446 | 2105 | 1906 |
| 35° | 2379 | 1958 | 1729 |
| 40° | 2311 | 1806 | 1527 |
| 45° | 2232 | 1638 | 1343 |
| 50° | 2151 | 1469 | 1164 |
| 55° | 2065 | 1288 | 992  |
| 60° | 1966 | 1099 | 815  |
| 65° | 1852 | 908  | 733  |
| 70° | 1713 | 729  | 661  |
| 75° | 1539 | 638  | 599  |
| 80° | 1287 | 530  | 516  |
| 85° | 875  | 345  | 381  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2232 cd/sqm



TEST NUMBER: P911194

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 214.8  | 2.5       |
| 10°-20°   | 589.6  | 6.8       |
| 20°-30°   | 827.8  | 9.6       |
| 30°-40°   | 902.4  | 10.4      |
| 40°-50°   | 829.4  | 9.6       |
| 50°-60°   | 651.3  | 7.5       |
| 60°-70°   | 424.0  | 4.9       |
| 70°-80°   | 218.2  | 2.5       |
| 80°-90°   | 59.7   | 0.7       |
| 90°-100°  | 86.8   | 1.0       |
| 100°-110° | 275.8  | 3.2       |
| 110°-120° | 472.0  | 5.5       |
| 120°-130° | 620.8  | 7.2       |
| 130°-140° | 696.8  | 8.1       |
| 140°-150° | 683.3  | 7.9       |
| 150°-160° | 573.2  | 6.6       |
| 160°-170° | 380.1  | 4.4       |
| 170°-180° | 132.9  | 1.5       |
| 0°-30°    | 1632.2 | 18.9      |
| 0°-40°    | 2534.6 | 29.3      |
| 0°-60°    | 4015.3 | 46.5      |
| 0°-90°    | 4717.3 | 54.6      |
| 90°-120°  | 834.7  | 9.7       |
| 90°-150°  | 2835.6 | 32.8      |
| 90°-180°  | 3922.0 | 45.4      |
| 0°-180°   | 8639.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2292 | 2292  | 2292 | 2292  | 2292 |      |
| 5°   | 2292 | 2281  | 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    | 15    | 42   | 39    | 40   | 8    |
| 95°  | 62   | 74    | 76   | 76    | 74   | 69   |
| 105° | 255  | 258   | 260  | 263   | 263  | 269  |
| 115° | 474  | 480   | 478  | 477   | 474  | 469  |
| 125° | 689  | 700   | 696  | 692   | 691  | 616  |
| 135° | 891  | 904   | 907  | 906   | 902  | 689  |
| 145° | 1082 | 1090  | 1097 | 1098  | 1094 | 676  |
| 155° | 1237 | 1240  | 1244 | 1250  | 1246 | 569  |
| 165° | 1346 | 1345  | 1345 | 1353  | 1347 | 380  |
| 175° | 1400 | 1397  | 1394 | 1403  | 1396 | 133  |
| 180° | 1403 | 1403  | 1403 | 1403  | 1403 |      |



TEST NUMBER: P911194

CATALOG NUMBER: DFN2DIP-PN3F0-050D040US850-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2291.7 | 2291.7 | 2291.7 | 2291.7 | 2291.7 |
| 2.5°   | 2302.1 | 2291.7 | 2268.9 | 2289.8 | 2285.5 |
| 5°     | 2291.7 | 2281.4 | 2254.4 | 2273.0 | 2266.9 |
| 7.5°   | 2273.0 | 2260.7 | 2231.6 | 2239.8 | 2229.4 |
| 10°    | 2248.2 | 2233.6 | 2192.3 | 2185.9 | 2173.5 |
| 12.5°  | 2217.1 | 2198.5 | 2142.4 | 2130.1 | 2107.1 |
| 15°    | 2179.7 | 2156.9 | 2086.5 | 2047.1 | 2026.4 |
| 17.5°  | 2136.2 | 2103.0 | 2015.8 | 1970.2 | 1937.0 |
| 20°    | 2086.5 | 2044.9 | 1941.2 | 1889.5 | 1843.7 |
| 22.5°  | 2032.6 | 1984.8 | 1864.5 | 1794.0 | 1763.0 |
| 25°    | 1978.6 | 1912.1 | 1775.3 | 1690.3 | 1659.1 |
| 27.5°  | 1914.4 | 1843.7 | 1692.3 | 1594.9 | 1547.2 |
| 30°    | 1845.9 | 1767.0 | 1601.1 | 1495.4 | 1439.3 |
| 32.5°  | 1779.5 | 1684.0 | 1514.1 | 1389.6 | 1337.7 |
| 35°    | 1704.9 | 1599.1 | 1416.6 | 1285.9 | 1240.2 |
| 37.5°  | 1632.2 | 1518.1 | 1325.4 | 1182.1 | 1130.4 |
| 40°    | 1555.5 | 1431.2 | 1229.8 | 1082.6 | 1028.7 |
| 42.5°  | 1476.7 | 1344.0 | 1134.5 | 980.9  | 929.2  |
| 45°    | 1393.8 | 1254.7 | 1037.0 | 889.6  | 839.8  |
| 47.5°  | 1314.9 | 1167.8 | 943.8  | 796.4  | 750.8  |
| 50°    | 1227.9 | 1080.6 | 852.5  | 709.2  | 665.8  |
| 52.5°  | 1142.7 | 987.1  | 765.3  | 628.5  | 589.1  |
| 55°    | 1059.8 | 898.0  | 673.9  | 549.6  | 510.3  |
| 57.5°  | 974.8  | 808.9  | 593.2  | 477.1  | 443.8  |
| 60°    | 887.6  | 721.7  | 508.0  | 402.5  | 369.2  |
| 62.5°  | 802.7  | 636.8  | 435.5  | 336.0  | 319.5  |
| 65°    | 715.5  | 547.5  | 360.9  | 290.4  | 284.1  |
| 67.5°  | 632.6  | 464.6  | 290.4  | 255.1  | 248.9  |
| 70°    | 545.5  | 383.7  | 240.5  | 219.8  | 211.5  |
| 72.5°  | 462.6  | 309.0  | 201.2  | 184.6  | 180.4  |
| 75°    | 381.6  | 236.3  | 165.9  | 151.4  | 149.4  |
| 77.5°  | 300.8  | 167.9  | 130.8  | 122.3  | 118.1  |
| 80°    | 226.0  | 120.3  | 99.5   | 91.3   | 91.3   |
| 82.5°  | 157.6  | 81.0   | 68.4   | 64.2   | 64.2   |
| 85°    | 89.2   | 45.6   | 39.4   | 39.4   | 39.4   |
| 87.5°  | 33.3   | 16.5   | 16.5   | 14.5   | 14.5   |
| 90°    | 1.2    | 15.2   | 41.5   | 38.9   | 40.1   |
| 92.5°  | 26.2   | 35.5   | 36.8   | 38.0   | 38.0   |
| 95°    | 61.8   | 73.6   | 75.7   | 75.7   | 73.6   |
| 97.5°  | 102.8  | 113.8  | 118.4  | 118.4  | 118.4  |
| 100°   | 150.2  | 159.9  | 163.2  | 163.2  | 162.0  |
| 102.5° | 200.1  | 207.3  | 211.9  | 213.1  | 211.9  |
| 105°   | 254.6  | 258.0  | 260.5  | 262.6  | 262.6  |
| 107.5° | 308.7  | 313.8  | 313.8  | 314.6  | 308.7  |
| 110°   | 361.2  | 368.0  | 368.0  | 368.0  | 364.6  |



TEST NUMBER: P911194

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 417.9  | 425.1  | 423.7  | 420.4  | 417.9  |
| 115°   | 473.7  | 480.5  | 478.3  | 477.1  | 473.7  |
| 117.5° | 529.1  | 538.4  | 532.5  | 529.1  | 525.8  |
| 120°   | 585.0  | 594.2  | 585.0  | 585.0  | 581.1  |
| 122.5° | 635.7  | 647.5  | 641.7  | 638.2  | 635.7  |
| 125°   | 689.0  | 699.6  | 696.2  | 692.3  | 691.1  |
| 127.5° | 741.0  | 754.1  | 749.5  | 744.4  | 741.0  |
| 130°   | 789.6  | 804.9  | 802.8  | 800.3  | 795.6  |
| 132.5° | 844.2  | 856.0  | 856.9  | 850.9  | 847.6  |
| 135°   | 891.2  | 904.3  | 906.8  | 905.5  | 902.2  |
| 137.5° | 943.6  | 954.2  | 956.3  | 955.4  | 950.4  |
| 140°   | 989.7  | 1000.3 | 1006.2 | 1006.2 | 1001.5 |
| 142.5° | 1037.1 | 1047.7 | 1051.0 | 1052.3 | 1047.7 |
| 145°   | 1081.9 | 1090.4 | 1097.1 | 1098.5 | 1093.8 |
| 147.5° | 1122.1 | 1132.6 | 1137.7 | 1139.8 | 1135.2 |
| 150°   | 1163.6 | 1170.8 | 1175.4 | 1179.2 | 1175.4 |
| 152.5° | 1200.4 | 1207.5 | 1213.5 | 1218.1 | 1213.5 |
| 155°   | 1237.1 | 1240.5 | 1244.3 | 1250.3 | 1246.4 |
| 157.5° | 1268.9 | 1271.4 | 1273.5 | 1282.0 | 1276.0 |
| 160°   | 1297.2 | 1299.7 | 1301.0 | 1308.2 | 1303.1 |
| 162.5° | 1323.4 | 1323.4 | 1324.7 | 1332.7 | 1326.8 |
| 165°   | 1345.9 | 1344.6 | 1344.6 | 1353.0 | 1347.1 |
| 167.5° | 1366.2 | 1362.3 | 1362.3 | 1370.8 | 1364.8 |
| 170°   | 1381.4 | 1377.9 | 1376.7 | 1385.1 | 1377.9 |
| 172.5° | 1391.9 | 1388.6 | 1387.2 | 1395.8 | 1388.6 |
| 175°   | 1400.4 | 1397.0 | 1394.5 | 1402.9 | 1395.8 |
| 177.5° | 1405.1 | 1401.7 | 1399.1 | 1406.3 | 1399.1 |
| 180°   | 1402.9 | 1402.9 | 1402.9 | 1402.9 | 1402.9 |



TEST NUMBER: P911194  
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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 | 10.95            | 11.82 | 11.87 | 12.76 | 13.96 | 6.92           | 7.79  | 7.84  | 8.72  | 9.93  |
|                 | 3H   | 12.63            | 13.40 | 13.56 | 14.35 | 15.58 | 8.10           | 8.88  | 9.04  | 9.83  | 11.06 |
|                 | 4H   | 13.23            | 13.97 | 14.18 | 14.92 | 16.16 | 8.55           | 9.29  | 9.50  | 10.24 | 11.48 |
|                 | 6H   | 13.65            | 14.33 | 14.61 | 15.28 | 16.54 | 8.87           | 9.54  | 9.83  | 10.50 | 11.75 |
|                 | 8H   | 13.78            | 14.42 | 14.74 | 15.39 | 16.64 | 8.96           | 9.60  | 9.92  | 10.57 | 11.82 |
|                 | 12H  | 13.84            | 14.45 | 14.81 | 15.41 | 16.69 | 9.00           | 9.61  | 9.97  | 10.58 | 11.85 |
| 4H              | 2H   | 10.97            | 11.71 | 11.93 | 12.66 | 13.90 | 7.51           | 8.25  | 8.47  | 9.20  | 10.44 |
|                 | 3H   | 12.80            | 13.41 | 13.76 | 14.39 | 15.64 | 8.86           | 9.47  | 9.83  | 10.45 | 11.71 |
|                 | 4H   | 13.49            | 14.04 | 14.46 | 15.02 | 16.30 | 9.41           | 9.96  | 10.38 | 10.94 | 12.22 |
|                 | 6H   | 14.00            | 14.48 | 14.98 | 15.48 | 16.75 | 9.82           | 10.30 | 10.81 | 11.30 | 12.57 |
|                 | 8H   | 14.17            | 14.62 | 15.16 | 15.61 | 16.90 | 9.95           | 10.39 | 10.93 | 11.38 | 12.68 |
|                 | 12H  | 14.26            | 14.67 | 15.27 | 15.68 | 16.97 | 10.01          | 10.41 | 11.02 | 11.42 | 12.72 |
| 8H              | 4H   | 13.46            | 13.90 | 14.44 | 14.89 | 16.19 | 9.68           | 10.13 | 10.67 | 11.12 | 12.41 |
|                 | 6H   | 14.02            | 14.39 | 15.03 | 15.42 | 16.71 | 10.20          | 10.56 | 11.21 | 11.60 | 12.89 |
|                 | 8H   | 14.23            | 14.55 | 15.25 | 15.58 | 16.88 | 10.38          | 10.71 | 11.40 | 11.73 | 13.04 |
|                 | 12H  | 14.37            | 14.65 | 15.39 | 15.67 | 17.02 | 10.50          | 10.78 | 11.52 | 11.80 | 13.15 |
| 12H             | 4H   | 13.41            | 13.81 | 14.42 | 14.82 | 16.12 | 9.69           | 10.09 | 10.70 | 11.10 | 12.40 |
|                 | 6H   | 13.99            | 14.32 | 15.01 | 15.34 | 16.65 | 10.24          | 10.57 | 11.26 | 11.59 | 12.90 |
|                 | 8H   | 14.21            | 14.50 | 15.23 | 15.51 | 16.86 | 10.45          | 10.74 | 11.47 | 11.75 | 13.10 |