

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: P917547

Luminaire Tested: DFN2DIP-SQ3F0-120D050US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917547  
REPORT IS A COMBINATION OF REPORTS P901416 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D050US930-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

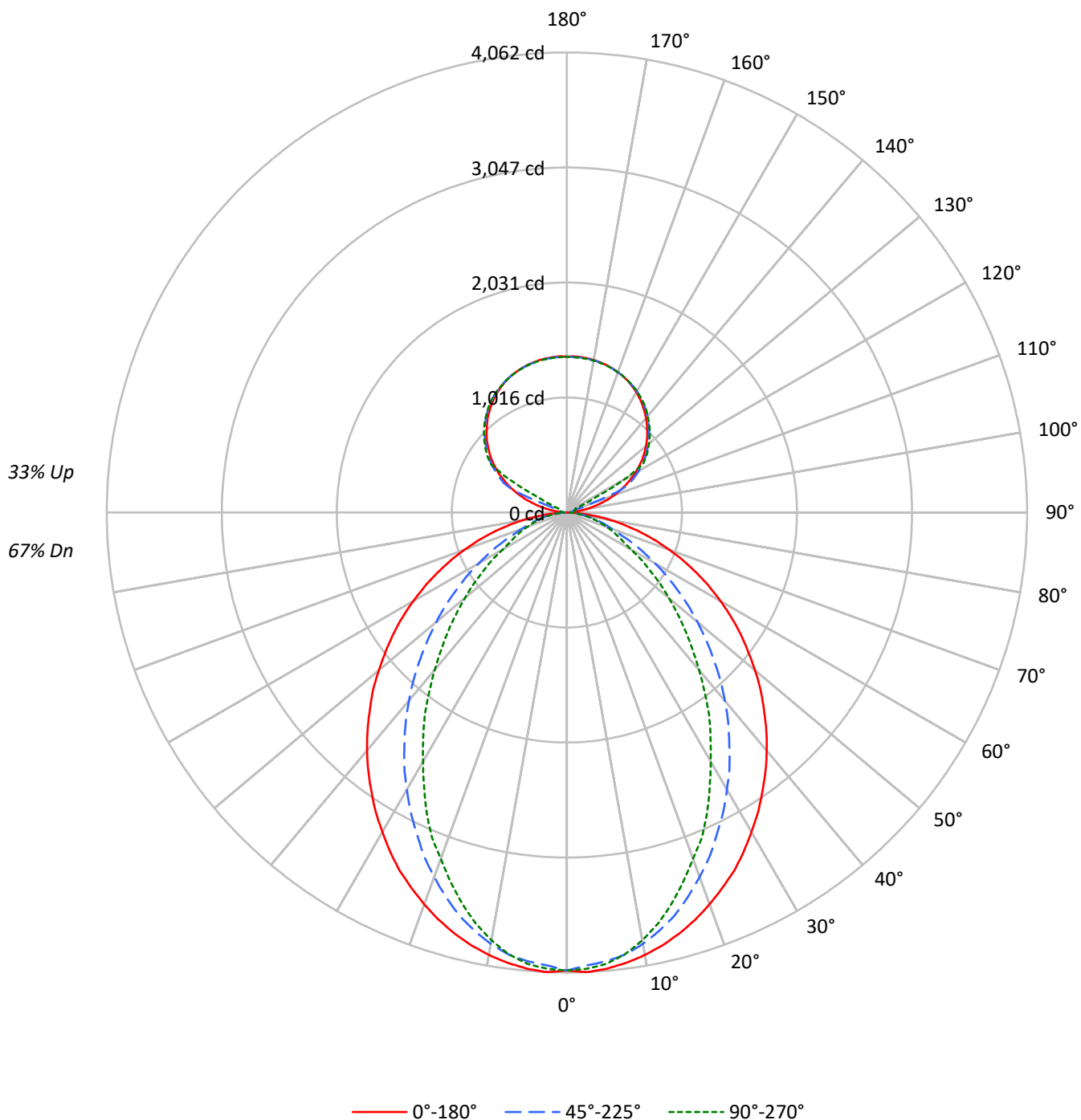
Lumens per Lamp: N/A  
Luminaire Lumens: 12351.8 lumens  
Efficiency: N/A  
Efficacy: 75.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 162.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLLONL

**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   | 111 | 111 | 111 | 111 | 105 | 105 | 105 | 105 | 93 | 93 | 93 | 82 | 82 | 82 | 72 | 72 | 72 |
| 1   | 102 | 98  | 94  | 91  | 96  | 93  | 89  | 86  | 83 | 80 | 78 | 73 | 71 | 70 | 65 | 63 | 62 |
| 2   | 94  | 86  | 80  | 75  | 88  | 82  | 77  | 72  | 73 | 69 | 66 | 65 | 62 | 59 | 58 | 55 | 53 |
| 3   | 86  | 77  | 69  | 64  | 81  | 73  | 66  | 61  | 65 | 60 | 56 | 58 | 54 | 51 | 52 | 49 | 46 |
| 4   | 79  | 68  | 61  | 55  | 74  | 65  | 58  | 52  | 58 | 53 | 48 | 52 | 48 | 44 | 47 | 43 | 40 |
| 5   | 73  | 61  | 53  | 47  | 69  | 58  | 51  | 46  | 53 | 47 | 42 | 47 | 43 | 39 | 42 | 39 | 36 |
| 6   | 67  | 55  | 47  | 42  | 63  | 53  | 45  | 40  | 48 | 42 | 37 | 43 | 38 | 34 | 39 | 35 | 32 |
| 7   | 63  | 50  | 42  | 37  | 59  | 48  | 41  | 36  | 44 | 38 | 33 | 39 | 35 | 31 | 36 | 32 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 30 | 36 | 31 | 28 | 33 | 29 | 26 |
| 9   | 54  | 42  | 35  | 30  | 51  | 40  | 33  | 29  | 37 | 31 | 27 | 34 | 29 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 31  | 26  | 34 | 28 | 25 | 31 | 26 | 23 | 28 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4633 | 4633 | 4633 |
| 5°  | 4638 | 4556 | 4587 |
| 10° | 4589 | 4464 | 4437 |
| 15° | 4523 | 4314 | 4204 |
| 20° | 4436 | 4107 | 3920 |
| 25° | 4347 | 3877 | 3645 |
| 30° | 4230 | 3640 | 3298 |
| 35° | 4114 | 3387 | 2992 |
| 40° | 3996 | 3125 | 2642 |
| 45° | 3859 | 2834 | 2325 |
| 50° | 3717 | 2541 | 2016 |
| 55° | 3569 | 2229 | 1718 |
| 60° | 3397 | 1902 | 1413 |
| 65° | 3199 | 1571 | 1270 |
| 70° | 2959 | 1262 | 1147 |
| 75° | 2657 | 1106 | 1040 |
| 80° | 2221 | 918  | 897  |
| 85° | 1506 | 598  | 666  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3859 cd/sqm

TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 379.0   | 3.1       |
| 10°-20°   | 1040.3  | 8.4       |
| 20°-30°   | 1460.6  | 11.8      |
| 30°-40°   | 1592.1  | 12.9      |
| 40°-50°   | 1463.4  | 11.8      |
| 50°-60°   | 1149.2  | 9.3       |
| 60°-70°   | 748.0   | 6.1       |
| 70°-80°   | 385.1   | 3.1       |
| 80°-90°   | 100.7   | 0.8       |
| 90°-100°  | 45.4    | 0.4       |
| 100°-110° | 169.1   | 1.4       |
| 110°-120° | 448.5   | 3.6       |
| 120°-130° | 743.9   | 6.0       |
| 130°-140° | 790.2   | 6.4       |
| 140°-150° | 734.4   | 5.9       |
| 150°-160° | 590.4   | 4.8       |
| 160°-170° | 380.5   | 3.1       |
| 170°-180° | 130.9   | 1.1       |
| 0°-30°    | 2879.9  | 23.3      |
| 0°-40°    | 4472.0  | 36.2      |
| 0°-60°    | 7084.6  | 57.4      |
| 0°-90°    | 8318.5  | 67.3      |
| 90°-120°  | 663.0   | 5.4       |
| 90°-150°  | 2931.5  | 23.7      |
| 90°-180°  | 4033.0  | 32.7      |
| 0°-180°   | 12351.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4044 | 4044  | 4044 | 4044  | 4044 |      |
| 5°   | 4044 | 4025  | 3978 | 4010  | 4000 | 383  |
| 15°  | 3846 | 3806  | 3681 | 3612  | 3575 | 1084 |
| 25°  | 3491 | 3374  | 3132 | 2982  | 2927 | 1606 |
| 35°  | 3008 | 2821  | 2500 | 2269  | 2188 | 1883 |
| 45°  | 2459 | 2214  | 1830 | 1570  | 1482 | 1899 |
| 55°  | 1870 | 1584  | 1189 | 970   | 900  | 1671 |
| 65°  | 1263 | 966   | 637  | 512   | 501  | 1252 |
| 75°  | 673  | 417   | 293  | 267   | 264  | 712  |
| 85°  | 157  | 80    | 70   | 70    | 70   | 181  |
| 90°  | 1    | 12    | 20   | 25    | 27   | 12   |
| 95°  | 65   | 32    | 39   | 44    | 43   | 77   |
| 105° | 303  | 333   | 61   | 72    | 76   | 323  |
| 115° | 572  | 589   | 614  | 153   | 82   | 564  |
| 125° | 809  | 822   | 841  | 848   | 851  | 722  |
| 135° | 1002 | 1018  | 1026 | 1036  | 1034 | 774  |
| 145° | 1162 | 1161  | 1178 | 1185  | 1180 | 727  |
| 155° | 1279 | 1270  | 1282 | 1288  | 1280 | 589  |
| 165° | 1348 | 1342  | 1345 | 1352  | 1345 | 381  |
| 175° | 1379 | 1372  | 1374 | 1381  | 1371 | 131  |
| 180° | 1376 | 1376  | 1376 | 1376  | 1376 |      |

TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4043.6 | 4043.6 | 4043.6 | 4043.6 | 4043.6 |
| 2.5°   | 4061.8 | 4043.6 | 4003.2 | 4040.0 | 4032.6 |
| 5°     | 4043.6 | 4025.3 | 3977.5 | 4010.5 | 3999.7 |
| 7.5°   | 4010.5 | 3988.8 | 3937.6 | 3951.9 | 3933.7 |
| 10°    | 3966.7 | 3941.1 | 3868.0 | 3856.8 | 3835.1 |
| 12.5°  | 3911.9 | 3878.9 | 3779.9 | 3758.2 | 3717.8 |
| 15°    | 3845.9 | 3805.6 | 3681.3 | 3611.8 | 3575.3 |
| 17.5°  | 3769.0 | 3710.4 | 3556.7 | 3476.4 | 3417.7 |
| 20°    | 3681.3 | 3607.9 | 3425.1 | 3333.8 | 3253.0 |
| 22.5°  | 3586.2 | 3502.0 | 3289.6 | 3165.3 | 3110.6 |
| 25°    | 3491.1 | 3373.8 | 3132.3 | 2982.4 | 2927.3 |
| 27.5°  | 3377.7 | 3253.0 | 2985.9 | 2814.0 | 2729.7 |
| 30°    | 3257.0 | 3117.6 | 2824.8 | 2638.5 | 2539.5 |
| 32.5°  | 3139.7 | 2971.2 | 2671.5 | 2451.8 | 2360.1 |
| 35°    | 3008.1 | 2821.3 | 2499.5 | 2268.9 | 2188.1 |
| 37.5°  | 2880.0 | 2678.5 | 2338.4 | 2085.6 | 1994.4 |
| 40°    | 2744.5 | 2525.1 | 2169.9 | 1910.2 | 1815.0 |
| 42.5°  | 2605.4 | 2371.4 | 2001.8 | 1730.8 | 1639.6 |
| 45°    | 2459.1 | 2213.8 | 1829.8 | 1569.7 | 1481.9 |
| 47.5°  | 2320.1 | 2060.4 | 1665.2 | 1405.1 | 1324.7 |
| 50°    | 2166.4 | 1906.7 | 1504.1 | 1251.3 | 1174.8 |
| 52.5°  | 2016.2 | 1741.6 | 1350.3 | 1108.8 | 1039.3 |
| 55°    | 1869.8 | 1584.5 | 1189.2 | 969.8  | 900.3  |
| 57.5°  | 1719.9 | 1427.2 | 1046.7 | 841.7  | 783.1  |
| 60°    | 1566.2 | 1273.4 | 896.4  | 710.1  | 651.5  |
| 62.5°  | 1416.3 | 1123.6 | 768.3  | 592.9  | 563.7  |
| 65°    | 1262.6 | 966.0  | 636.7  | 512.5  | 501.2  |
| 67.5°  | 1116.2 | 819.5  | 512.5  | 450.0  | 439.1  |
| 70°    | 962.5  | 677.1  | 424.4  | 387.8  | 373.1  |
| 72.5°  | 816.1  | 545.1  | 354.8  | 325.7  | 318.4  |
| 75°    | 673.2  | 416.9  | 292.8  | 267.1  | 263.6  |
| 77.5°  | 530.8  | 296.2  | 230.6  | 215.9  | 208.5  |
| 80°    | 398.8  | 212.4  | 175.5  | 161.1  | 161.1  |
| 82.5°  | 278.0  | 142.8  | 120.7  | 113.3  | 113.3  |
| 85°    | 157.3  | 80.4   | 69.5   | 69.5   | 69.5   |
| 87.5°  | 58.6   | 29.1   | 29.1   | 25.6   | 25.6   |
| 90°    | 1.0    | 11.9   | 19.9   | 24.9   | 26.8   |
| 92.5°  | 24.9   | 21.0   | 23.9   | 25.9   | 26.8   |
| 95°    | 64.7   | 31.8   | 38.8   | 43.9   | 42.8   |
| 97.5°  | 116.4  | 34.9   | 50.7   | 53.8   | 54.7   |
| 100°   | 176.3  | 39.9   | 56.7   | 64.7   | 66.7   |
| 102.5° | 241.9  | 239.9  | 58.8   | 69.6   | 72.7   |
| 105°   | 302.6  | 332.6  | 60.7   | 71.7   | 75.7   |
| 107.5° | 373.3  | 398.1  | 62.8   | 73.6   | 77.7   |
| 110°   | 441.1  | 461.9  | 174.2  | 74.7   | 78.6   |

TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.8  | 522.6  | 505.7  | 76.6   | 79.7   |
| 115°   | 572.4  | 589.3  | 614.2  | 153.4  | 81.7   |
| 117.5° | 631.1  | 651.0  | 668.1  | 525.5  | 264.8  |
| 120°   | 696.8  | 711.8  | 729.7  | 741.7  | 607.2  |
| 122.5° | 752.5  | 768.5  | 788.5  | 794.4  | 795.5  |
| 125°   | 809.3  | 822.3  | 841.2  | 848.2  | 851.2  |
| 127.5° | 861.0  | 875.0  | 890.1  | 899.9  | 900.9  |
| 130°   | 909.9  | 925.9  | 936.7  | 947.7  | 946.8  |
| 132.5° | 959.7  | 972.7  | 983.5  | 992.5  | 991.6  |
| 135°   | 1001.5 | 1017.5 | 1026.3 | 1036.4 | 1034.4 |
| 137.5° | 1045.2 | 1057.2 | 1067.2 | 1077.2 | 1074.2 |
| 140°   | 1088.0 | 1096.1 | 1106.9 | 1115.9 | 1111.0 |
| 142.5° | 1124.0 | 1131.0 | 1143.9 | 1151.8 | 1146.8 |
| 145°   | 1161.8 | 1160.7 | 1177.6 | 1184.6 | 1179.7 |
| 147.5° | 1194.6 | 1191.6 | 1208.5 | 1213.5 | 1209.6 |
| 150°   | 1226.5 | 1219.5 | 1235.4 | 1241.4 | 1236.4 |
| 152.5° | 1253.3 | 1245.4 | 1260.3 | 1266.3 | 1259.3 |
| 155°   | 1279.2 | 1270.3 | 1282.2 | 1288.2 | 1280.3 |
| 157.5° | 1300.1 | 1292.2 | 1301.1 | 1308.1 | 1300.1 |
| 160°   | 1318.1 | 1312.1 | 1318.1 | 1324.0 | 1317.0 |
| 162.5° | 1333.9 | 1328.0 | 1332.9 | 1339.9 | 1331.0 |
| 165°   | 1347.9 | 1342.0 | 1344.9 | 1351.8 | 1344.9 |
| 167.5° | 1358.9 | 1352.8 | 1355.9 | 1362.9 | 1353.9 |
| 170°   | 1367.8 | 1361.8 | 1363.8 | 1370.8 | 1361.8 |
| 172.5° | 1373.8 | 1367.8 | 1369.9 | 1376.8 | 1367.8 |
| 175°   | 1378.8 | 1371.7 | 1373.8 | 1380.7 | 1370.8 |
| 177.5° | 1380.7 | 1373.8 | 1374.8 | 1381.8 | 1372.8 |
| 180°   | 1375.7 | 1375.7 | 1375.7 | 1375.7 | 1375.7 |

TEST NUMBER: P917547

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US930-RLONL

**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 | 13.92            | 14.92 | 14.72 | 15.74 | 16.74 | 9.88           | 10.88 | 10.68 | 11.70 | 12.70 |
|                 | 3H   | 15.61            | 16.50 | 16.42 | 17.33 | 18.36 | 11.08          | 11.97 | 11.89 | 12.80 | 13.83 |
|                 | 4H   | 16.22            | 17.06 | 17.05 | 17.90 | 18.94 | 11.53          | 12.37 | 12.36 | 13.21 | 14.25 |
|                 | 6H   | 16.65            | 17.42 | 17.49 | 18.26 | 19.32 | 11.86          | 12.63 | 12.70 | 13.47 | 14.53 |
|                 | 8H   | 16.78            | 17.51 | 17.63 | 18.37 | 19.43 | 11.95          | 12.68 | 12.80 | 13.54 | 14.60 |
|                 | 12H  | 16.84            | 17.54 | 17.70 | 18.40 | 19.48 | 11.99          | 12.69 | 12.85 | 13.55 | 14.63 |
| 4H              | 2H   | 13.96            | 14.80 | 14.80 | 15.63 | 16.68 | 10.50          | 11.34 | 11.33 | 12.17 | 13.22 |
|                 | 3H   | 15.80            | 16.50 | 16.65 | 17.36 | 18.42 | 11.86          | 12.55 | 12.70 | 13.42 | 14.48 |
|                 | 4H   | 16.49            | 17.13 | 17.35 | 17.99 | 19.08 | 12.40          | 13.04 | 13.26 | 13.90 | 14.99 |
|                 | 6H   | 17.01            | 17.56 | 17.89 | 18.45 | 19.54 | 12.83          | 13.37 | 13.70 | 14.26 | 15.35 |
|                 | 8H   | 17.19            | 17.70 | 18.07 | 18.58 | 19.69 | 12.95          | 13.46 | 13.83 | 14.35 | 15.45 |
|                 | 12H  | 17.29            | 17.75 | 18.19 | 18.65 | 19.76 | 13.02          | 13.48 | 13.92 | 14.39 | 15.49 |
| 8H              | 4H   | 16.47            | 16.98 | 17.35 | 17.87 | 18.97 | 12.69          | 13.20 | 13.57 | 14.09 | 15.19 |
|                 | 6H   | 17.04            | 17.46 | 17.94 | 18.39 | 19.49 | 13.21          | 13.63 | 14.11 | 14.56 | 15.66 |
|                 | 8H   | 17.25            | 17.63 | 18.17 | 18.55 | 19.67 | 13.40          | 13.77 | 14.31 | 14.69 | 15.81 |
|                 | 12H  | 17.40            | 17.72 | 18.31 | 18.64 | 19.81 | 13.52          | 13.85 | 14.43 | 14.76 | 15.93 |
| 12H             | 4H   | 16.43            | 16.89 | 17.33 | 17.79 | 18.90 | 12.71          | 13.16 | 13.60 | 14.07 | 15.18 |
|                 | 6H   | 17.01            | 17.39 | 17.93 | 18.31 | 19.43 | 13.26          | 13.63 | 14.17 | 14.55 | 15.67 |
|                 | 8H   | 17.24            | 17.57 | 18.16 | 18.48 | 19.65 | 13.47          | 13.80 | 14.39 | 14.71 | 15.88 |