

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: P925724

Luminaire Tested: DFN2DIP-SQ3F0-120D040US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925724  
REPORT IS A COMBINATION OF REPORTS P899877 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D040US950-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

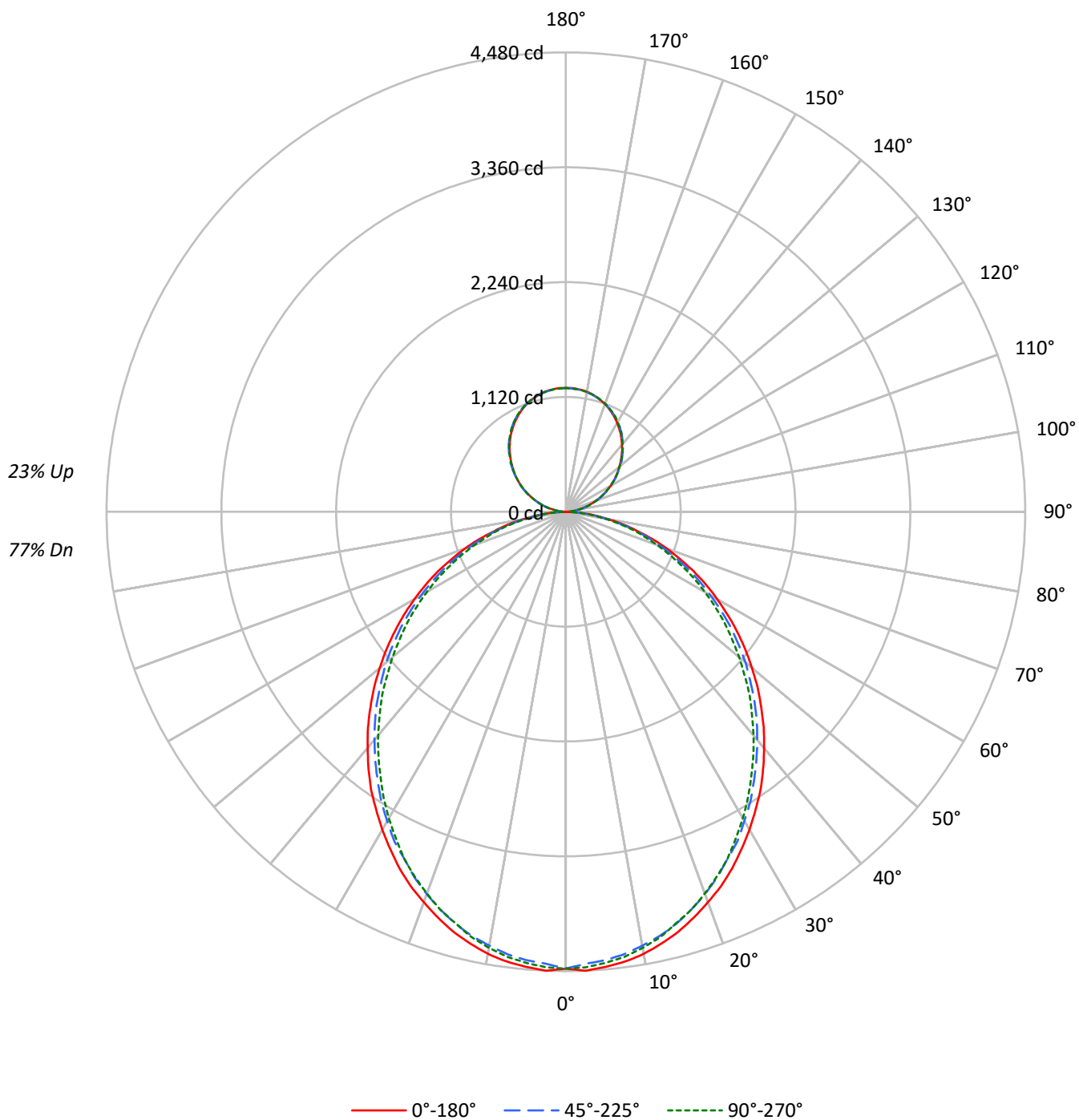
Lumens per Lamp: N/A  
Luminaire Lumens: 14710.7 lumens  
Efficiency: N/A  
Efficacy: 94.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 156.1  
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: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFL

**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   | 114 | 114 | 114 | 114 | 108 | 108 | 108 | 108 | 98 | 98 | 98 | 89 | 89 | 89 | 81 | 81 | 81 |
| 1   | 104 | 99  | 95  | 92  | 99  | 95  | 91  | 88  | 86 | 84 | 81 | 79 | 77 | 75 | 72 | 70 | 68 |
| 2   | 95  | 87  | 80  | 75  | 90  | 83  | 77  | 72  | 76 | 71 | 67 | 69 | 66 | 62 | 63 | 60 | 58 |
| 3   | 86  | 76  | 69  | 63  | 82  | 73  | 66  | 61  | 67 | 61 | 57 | 61 | 57 | 53 | 56 | 52 | 49 |
| 4   | 79  | 68  | 59  | 53  | 75  | 65  | 57  | 52  | 60 | 53 | 48 | 55 | 50 | 45 | 50 | 46 | 42 |
| 5   | 73  | 61  | 52  | 46  | 69  | 58  | 50  | 44  | 53 | 47 | 42 | 49 | 44 | 39 | 45 | 41 | 37 |
| 6   | 67  | 55  | 46  | 40  | 64  | 52  | 45  | 39  | 48 | 42 | 37 | 45 | 39 | 35 | 41 | 36 | 33 |
| 7   | 62  | 49  | 41  | 35  | 59  | 48  | 40  | 34  | 44 | 37 | 33 | 41 | 35 | 31 | 37 | 33 | 29 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 31  | 40 | 34 | 29 | 37 | 32 | 28 | 34 | 30 | 26 |
| 9   | 54  | 41  | 33  | 28  | 52  | 40  | 32  | 27  | 37 | 31 | 26 | 34 | 29 | 25 | 32 | 27 | 24 |
| 10  | 51  | 38  | 30  | 25  | 48  | 37  | 30  | 25  | 34 | 28 | 24 | 32 | 26 | 23 | 30 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5104 | 5104 | 5104 |
| 5°  | 5109 | 5029 | 5065 |
| 10° | 5064 | 4958 | 4995 |
| 15° | 4986 | 4873 | 4886 |
| 20° | 4883 | 4756 | 4775 |
| 25° | 4779 | 4618 | 4646 |
| 30° | 4650 | 4488 | 4483 |
| 35° | 4528 | 4336 | 4311 |
| 40° | 4378 | 4182 | 4147 |
| 45° | 4228 | 4027 | 3979 |
| 50° | 4064 | 3865 | 3785 |
| 55° | 3892 | 3677 | 3606 |
| 60° | 3697 | 3454 | 3401 |
| 65° | 3485 | 3223 | 3159 |
| 70° | 3213 | 2941 | 2898 |
| 75° | 2839 | 2604 | 2654 |
| 80° | 2386 | 2172 | 2194 |
| 85° | 1680 | 1439 | 1436 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4228 cd/sqm

TEST NUMBER: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 419.3   | 2.9       |
| 10°-20°   | 1179.6  | 8.0       |
| 20°-30°   | 1733.6  | 11.8      |
| 30°-40°   | 2013.5  | 13.7      |
| 40°-50°   | 2011.0  | 13.7      |
| 50°-60°   | 1753.5  | 11.9      |
| 60°-70°   | 1296.2  | 8.8       |
| 70°-80°   | 733.4   | 5.0       |
| 80°-90°   | 197.0   | 1.3       |
| 90°-100°  | 74.7    | 0.5       |
| 100°-110° | 237.3   | 1.6       |
| 110°-120° | 406.1   | 2.8       |
| 120°-130° | 534.0   | 3.6       |
| 130°-140° | 599.4   | 4.1       |
| 140°-150° | 587.8   | 4.0       |
| 150°-160° | 493.1   | 3.4       |
| 160°-170° | 327.0   | 2.2       |
| 170°-180° | 114.3   | 0.8       |
| 0°-30°    | 3332.5  | 22.7      |
| 0°-40°    | 5345.9  | 36.3      |
| 0°-60°    | 9110.4  | 61.9      |
| 0°-90°    | 11336.9 | 77.1      |
| 90°-120°  | 718.0   | 4.9       |
| 90°-150°  | 2439.3  | 16.6      |
| 90°-180°  | 3374.0  | 22.9      |
| 0°-180°   | 14710.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4454 | 4454  | 4454 | 4454  | 4454 |      |
| 5°   | 4454 | 4438  | 4390 | 4424  | 4416 | 423  |
| 15°  | 4240 | 4215  | 4159 | 4176  | 4155 | 1194 |
| 25°  | 3838 | 3804  | 3731 | 3739  | 3731 | 1766 |
| 35°  | 3311 | 3268  | 3200 | 3174  | 3152 | 2068 |
| 45°  | 2694 | 2664  | 2600 | 2553  | 2536 | 2079 |
| 55°  | 2039 | 2013  | 1962 | 1910  | 1889 | 1823 |
| 65°  | 1375 | 1349  | 1306 | 1268  | 1247 | 1360 |
| 75°  | 719  | 711   | 689  | 664   | 673  | 768  |
| 85°  | 175  | 171   | 167  | 154   | 150  | 196  |
| 90°  | 1    | 13    | 36   | 34    | 34   | 14   |
| 95°  | 53   | 63    | 65   | 65    | 63   | 59   |
| 105° | 219  | 222   | 224  | 226   | 226  | 231  |
| 115° | 408  | 413   | 412  | 410   | 408  | 403  |
| 125° | 593  | 602   | 599  | 596   | 594  | 530  |
| 135° | 767  | 778   | 780  | 779   | 776  | 593  |
| 145° | 931  | 938   | 944  | 945   | 941  | 582  |
| 155° | 1064 | 1067  | 1070 | 1076  | 1072 | 490  |
| 165° | 1158 | 1157  | 1157 | 1164  | 1159 | 327  |
| 175° | 1205 | 1202  | 1200 | 1207  | 1201 | 114  |
| 180° | 1207 | 1207  | 1207 | 1207  | 1207 |      |

TEST NUMBER: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4454.5 | 4454.5 | 4454.5 | 4454.5 | 4454.5 |
| 2.5°   | 4480.4 | 4459.0 | 4411.8 | 4454.5 | 4446.3 |
| 5°     | 4454.5 | 4437.6 | 4390.4 | 4424.5 | 4416.3 |
| 7.5°   | 4424.5 | 4399.0 | 4351.8 | 4386.3 | 4377.7 |
| 10°    | 4377.7 | 4347.7 | 4296.3 | 4330.4 | 4317.7 |
| 12.5°  | 4313.1 | 4287.7 | 4236.3 | 4257.7 | 4249.0 |
| 15°    | 4240.4 | 4215.0 | 4159.1 | 4176.3 | 4155.0 |
| 17.5°  | 4150.5 | 4125.0 | 4069.1 | 4090.5 | 4069.1 |
| 20°    | 4051.8 | 4026.4 | 3966.4 | 3979.1 | 3962.3 |
| 22.5°  | 3953.7 | 3915.0 | 3859.1 | 3859.1 | 3850.5 |
| 25°    | 3837.8 | 3803.7 | 3731.0 | 3739.2 | 3731.0 |
| 27.5°  | 3709.2 | 3679.2 | 3623.8 | 3611.0 | 3589.7 |
| 30°    | 3581.0 | 3546.5 | 3482.4 | 3469.7 | 3452.4 |
| 32.5°  | 3443.7 | 3418.4 | 3349.7 | 3323.8 | 3306.6 |
| 35°    | 3311.0 | 3268.4 | 3199.7 | 3173.9 | 3152.5 |
| 37.5°  | 3161.1 | 3122.5 | 3053.8 | 3023.9 | 3002.5 |
| 40°    | 3007.1 | 2972.6 | 2903.9 | 2865.7 | 2848.5 |
| 42.5°  | 2857.1 | 2822.6 | 2754.4 | 2711.3 | 2685.8 |
| 45°    | 2694.4 | 2664.4 | 2599.8 | 2553.1 | 2535.8 |
| 47.5°  | 2535.8 | 2505.8 | 2437.2 | 2390.0 | 2364.5 |
| 50°    | 2368.6 | 2347.2 | 2287.2 | 2227.2 | 2205.8 |
| 52.5°  | 2205.8 | 2175.9 | 2120.5 | 2073.1 | 2043.2 |
| 55°    | 2039.1 | 2013.2 | 1961.8 | 1910.5 | 1889.1 |
| 57.5°  | 1871.8 | 1850.5 | 1794.6 | 1743.2 | 1726.0 |
| 60°    | 1704.6 | 1687.8 | 1627.8 | 1580.6 | 1567.8 |
| 62.5°  | 1542.0 | 1511.9 | 1469.3 | 1426.5 | 1409.2 |
| 65°    | 1375.2 | 1349.2 | 1306.5 | 1267.9 | 1246.6 |
| 67.5°  | 1203.9 | 1182.0 | 1143.8 | 1113.9 | 1096.6 |
| 70°    | 1045.2 | 1027.9 | 989.3  | 959.3  | 942.6  |
| 72.5°  | 882.5  | 865.3  | 843.9  | 814.0  | 801.2  |
| 75°    | 719.4  | 711.2  | 689.4  | 664.0  | 672.6  |
| 77.5°  | 573.9  | 556.7  | 548.1  | 535.3  | 522.6  |
| 80°    | 428.5  | 424.0  | 415.4  | 402.7  | 394.0  |
| 82.5°  | 291.3  | 291.3  | 287.2  | 270.0  | 270.0  |
| 85°    | 175.4  | 171.3  | 167.2  | 154.1  | 150.0  |
| 87.5°  | 77.3   | 68.6   | 60.0   | 47.2   | 42.7   |
| 90°    | 1.0    | 13.1   | 35.7   | 33.5   | 34.5   |
| 92.5°  | 22.5   | 30.5   | 31.7   | 32.7   | 32.7   |
| 95°    | 53.1   | 63.3   | 65.2   | 65.2   | 63.3   |
| 97.5°  | 88.4   | 97.9   | 101.9  | 101.9  | 101.9  |
| 100°   | 129.2  | 137.6  | 140.4  | 140.4  | 139.4  |
| 102.5° | 172.1  | 178.3  | 182.3  | 183.4  | 182.3  |
| 105°   | 219.0  | 221.9  | 224.1  | 225.9  | 225.9  |
| 107.5° | 265.6  | 270.0  | 270.0  | 270.6  | 265.6  |
| 110°   | 310.7  | 316.5  | 316.5  | 316.5  | 313.7  |

TEST NUMBER: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 359.5  | 365.7  | 364.5  | 361.7  | 359.5  |
| 115°   | 407.5  | 413.4  | 411.5  | 410.4  | 407.5  |
| 117.5° | 455.2  | 463.2  | 458.1  | 455.2  | 452.3  |
| 120°   | 503.2  | 511.2  | 503.2  | 503.2  | 499.9  |
| 122.5° | 546.8  | 557.0  | 552.0  | 549.0  | 546.8  |
| 125°   | 592.7  | 601.8  | 598.9  | 595.6  | 594.5  |
| 127.5° | 637.5  | 648.7  | 644.7  | 640.3  | 637.5  |
| 130°   | 679.2  | 692.4  | 690.6  | 688.4  | 684.4  |
| 132.5° | 726.2  | 736.4  | 737.2  | 732.0  | 729.1  |
| 135°   | 766.6  | 777.9  | 780.1  | 778.9  | 776.1  |
| 137.5° | 811.8  | 820.8  | 822.6  | 821.9  | 817.6  |
| 140°   | 851.3  | 860.5  | 865.6  | 865.6  | 861.6  |
| 142.5° | 892.2  | 901.2  | 904.1  | 905.3  | 901.2  |
| 145°   | 930.7  | 938.0  | 943.8  | 944.9  | 940.9  |
| 147.5° | 965.3  | 974.3  | 978.7  | 980.5  | 976.5  |
| 150°   | 1000.9 | 1007.1 | 1011.1 | 1014.4 | 1011.1 |
| 152.5° | 1032.6 | 1038.7 | 1043.9 | 1047.9 | 1043.9 |
| 155°   | 1064.2 | 1067.1 | 1070.4 | 1075.5 | 1072.2 |
| 157.5° | 1091.6 | 1093.7 | 1095.5 | 1102.8 | 1097.7 |
| 160°   | 1115.9 | 1118.1 | 1119.1 | 1125.3 | 1121.0 |
| 162.5° | 1138.4 | 1138.4 | 1139.6 | 1146.4 | 1141.4 |
| 165°   | 1157.8 | 1156.6 | 1156.6 | 1163.9 | 1158.8 |
| 167.5° | 1175.2 | 1171.9 | 1171.9 | 1179.2 | 1174.1 |
| 170°   | 1188.3 | 1185.3 | 1184.3 | 1191.5 | 1185.3 |
| 172.5° | 1197.4 | 1194.5 | 1193.4 | 1200.7 | 1194.5 |
| 175°   | 1204.7 | 1201.8 | 1199.6 | 1206.8 | 1200.7 |
| 177.5° | 1208.7 | 1205.8 | 1203.6 | 1209.8 | 1203.6 |
| 180°   | 1206.8 | 1206.8 | 1206.8 | 1206.8 | 1206.8 |

TEST NUMBER: P925724

CATALOG NUMBER: DFN2DIP-SQ3F0-120D040US950-FLLFLL

**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 | 15.10            | 16.27 | 15.78 | 16.97 | 17.80 | 14.65          | 15.83 | 15.34 | 16.53 | 17.35 |
|                 | 3H   | 16.78            | 17.83 | 17.48 | 18.54 | 19.40 | 16.29          | 17.34 | 16.98 | 18.05 | 18.91 |
|                 | 4H   | 17.38            | 18.37 | 18.09 | 19.09 | 19.96 | 16.88          | 17.88 | 17.60 | 18.60 | 19.47 |
|                 | 6H   | 17.79            | 18.71 | 18.52 | 19.44 | 20.32 | 17.29          | 18.21 | 18.02 | 18.94 | 19.82 |
|                 | 8H   | 17.90            | 18.77 | 18.64 | 19.53 | 20.41 | 17.40          | 18.27 | 18.14 | 19.03 | 19.91 |
|                 | 12H  | 17.96            | 18.79 | 18.70 | 19.54 | 20.45 | 17.45          | 18.28 | 18.19 | 19.03 | 19.94 |
| 4H              | 2H   | 15.59            | 16.59 | 16.31 | 17.31 | 18.18 | 15.24          | 16.23 | 15.96 | 16.95 | 17.82 |
|                 | 3H   | 17.48            | 18.31 | 18.21 | 19.07 | 19.96 | 17.07          | 17.90 | 17.81 | 18.66 | 19.55 |
|                 | 4H   | 18.20            | 18.96 | 18.95 | 19.72 | 20.64 | 17.78          | 18.53 | 18.53 | 19.30 | 20.21 |
|                 | 6H   | 18.73            | 19.39 | 19.50 | 20.17 | 21.10 | 18.30          | 18.95 | 19.07 | 19.74 | 20.66 |
|                 | 8H   | 18.89            | 19.50 | 19.66 | 20.28 | 21.22 | 18.45          | 19.06 | 19.22 | 19.84 | 20.78 |
|                 | 12H  | 18.97            | 19.52 | 19.76 | 20.33 | 21.27 | 18.52          | 19.07 | 19.31 | 19.88 | 20.82 |
| 8H              | 4H   | 18.42            | 19.03 | 19.19 | 19.81 | 20.75 | 18.04          | 18.66 | 18.81 | 19.44 | 20.37 |
|                 | 6H   | 19.06            | 19.57 | 19.86 | 20.39 | 21.33 | 18.67          | 19.18 | 19.48 | 20.01 | 20.94 |
|                 | 8H   | 19.28            | 19.73 | 20.09 | 20.55 | 21.51 | 18.89          | 19.34 | 19.70 | 20.16 | 21.12 |
|                 | 12H  | 19.42            | 19.82 | 20.24 | 20.63 | 21.65 | 19.01          | 19.41 | 19.83 | 20.22 | 21.24 |
| 12H             | 4H   | 18.42            | 18.97 | 19.21 | 19.78 | 20.72 | 18.05          | 18.60 | 18.84 | 19.41 | 20.35 |
|                 | 6H   | 19.09            | 19.54 | 19.90 | 20.36 | 21.32 | 18.72          | 19.17 | 19.53 | 19.99 | 20.95 |
|                 | 8H   | 19.34            | 19.74 | 20.16 | 20.55 | 21.57 | 18.96          | 19.36 | 19.78 | 20.17 | 21.19 |