

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: P925731

Luminaire Tested: DFN2DIP-SQ3F0-120D050US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925731  
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-SQ3F0-120D050US950-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

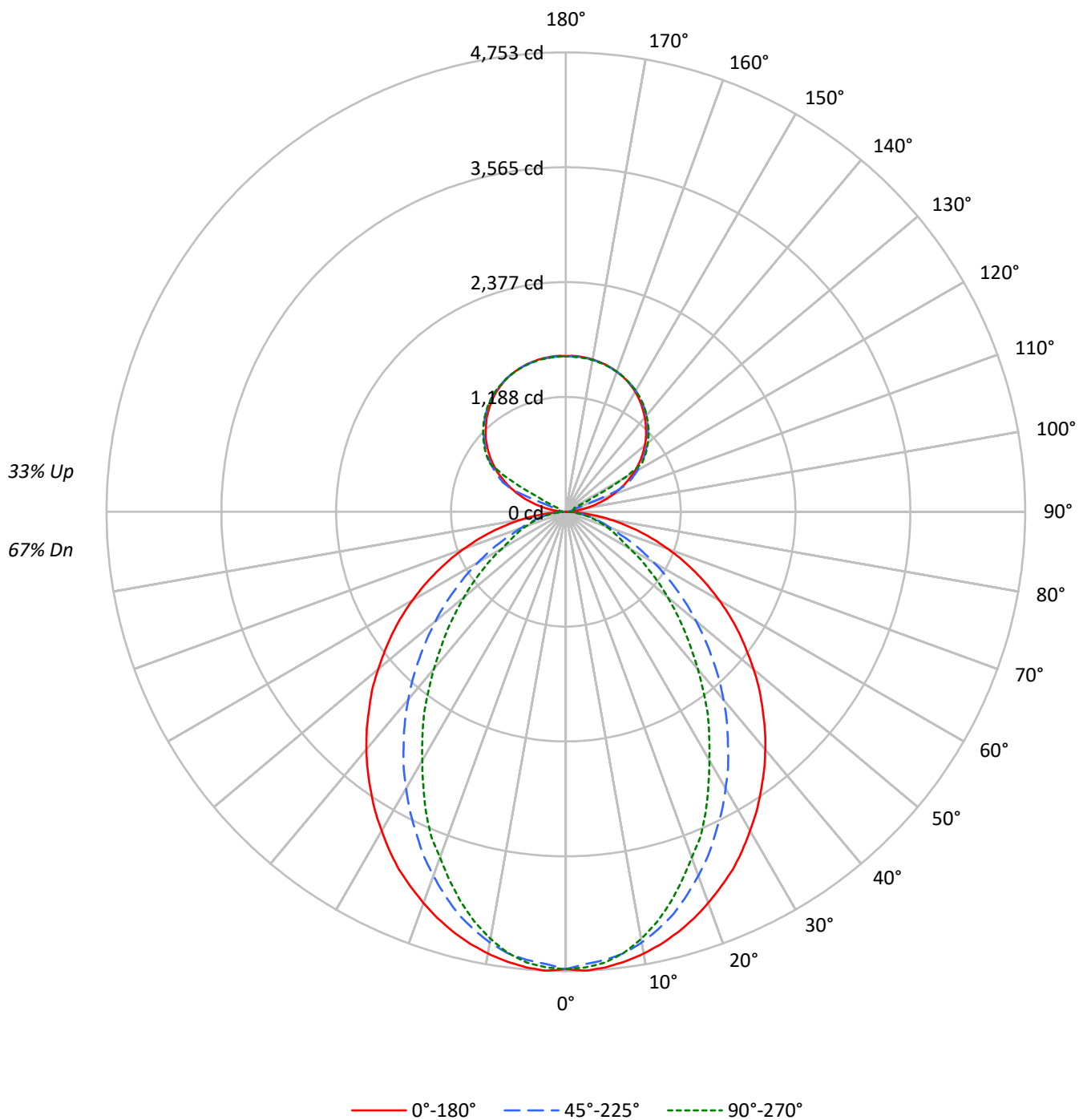
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14453.1 lumens  
Efficiency: N/A  
Efficacy: 88.8 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

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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   | 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°  | 5421 | 5421 | 5421 |
| 5°  | 5427 | 5332 | 5368 |
| 10° | 5369 | 5224 | 5191 |
| 15° | 5292 | 5047 | 4920 |
| 20° | 5191 | 4806 | 4587 |
| 25° | 5087 | 4536 | 4266 |
| 30° | 4949 | 4260 | 3859 |
| 35° | 4814 | 3963 | 3501 |
| 40° | 4675 | 3656 | 3092 |
| 45° | 4515 | 3316 | 2721 |
| 50° | 4350 | 2974 | 2359 |
| 55° | 4176 | 2608 | 2011 |
| 60° | 3975 | 2226 | 1653 |
| 65° | 3744 | 1838 | 1486 |
| 70° | 3463 | 1476 | 1342 |
| 75° | 3109 | 1294 | 1217 |
| 80° | 2598 | 1074 | 1050 |
| 85° | 1762 | 700  | 778  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4515 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 443.4   | 3.1       |
| 10°-20°   | 1217.3  | 8.4       |
| 20°-30°   | 1709.1  | 11.8      |
| 30°-40°   | 1863.0  | 12.9      |
| 40°-50°   | 1712.3  | 11.8      |
| 50°-60°   | 1344.7  | 9.3       |
| 60°-70°   | 875.3   | 6.1       |
| 70°-80°   | 450.6   | 3.1       |
| 80°-90°   | 117.9   | 0.8       |
| 90°-100°  | 53.1    | 0.4       |
| 100°-110° | 197.9   | 1.4       |
| 110°-120° | 524.8   | 3.6       |
| 120°-130° | 870.4   | 6.0       |
| 130°-140° | 924.6   | 6.4       |
| 140°-150° | 859.3   | 5.9       |
| 150°-160° | 690.9   | 4.8       |
| 160°-170° | 445.2   | 3.1       |
| 170°-180° | 153.2   | 1.1       |
| 0°-30°    | 3369.8  | 23.3      |
| 0°-40°    | 5232.8  | 36.2      |
| 0°-60°    | 8289.9  | 57.4      |
| 0°-90°    | 9733.6  | 67.3      |
| 90°-120°  | 775.8   | 5.4       |
| 90°-150°  | 3430.2  | 23.7      |
| 90°-180°  | 4719.0  | 32.7      |
| 0°-180°   | 14453.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4732 | 4732  | 4732 | 4732  | 4732 |      |
| 5°   | 4732 | 4710  | 4654 | 4693  | 4680 | 449  |
| 15°  | 4500 | 4453  | 4308 | 4226  | 4184 | 1268 |
| 25°  | 4085 | 3948  | 3665 | 3490  | 3425 | 1879 |
| 35°  | 3520 | 3301  | 2925 | 2655  | 2560 | 2203 |
| 45°  | 2878 | 2590  | 2141 | 1837  | 1734 | 2222 |
| 55°  | 2188 | 1854  | 1392 | 1135  | 1054 | 1955 |
| 65°  | 1477 | 1130  | 745  | 600   | 586  | 1465 |
| 75°  | 788  | 488   | 343  | 312   | 308  | 833  |
| 85°  | 184  | 94    | 81   | 81    | 81   | 211  |
| 90°  | 1    | 14    | 23   | 29    | 31   | 14   |
| 95°  | 76   | 37    | 45   | 51    | 50   | 90   |
| 105° | 354  | 389   | 71   | 84    | 88   | 378  |
| 115° | 670  | 690   | 719  | 179   | 96   | 659  |
| 125° | 947  | 962   | 984  | 992   | 996  | 845  |
| 135° | 1172 | 1191  | 1201 | 1213  | 1210 | 905  |
| 145° | 1359 | 1358  | 1378 | 1386  | 1380 | 850  |
| 155° | 1497 | 1486  | 1500 | 1507  | 1498 | 690  |
| 165° | 1577 | 1570  | 1574 | 1582  | 1574 | 446  |
| 175° | 1613 | 1605  | 1608 | 1616  | 1604 | 154  |
| 180° | 1610 | 1610  | 1610 | 1610  | 1610 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4731.5 | 4731.5 | 4731.5 | 4731.5 | 4731.5 |
| 2.5°   | 4752.8 | 4731.5 | 4684.2 | 4727.4 | 4718.7 |
| 5°     | 4731.5 | 4710.1 | 4654.2 | 4692.8 | 4680.1 |
| 7.5°   | 4692.8 | 4667.3 | 4607.4 | 4624.2 | 4602.9 |
| 10°    | 4641.5 | 4611.5 | 4526.1 | 4512.9 | 4487.5 |
| 12.5°  | 4577.4 | 4538.8 | 4422.9 | 4397.6 | 4350.3 |
| 15°    | 4500.2 | 4453.0 | 4307.6 | 4226.2 | 4183.6 |
| 17.5°  | 4410.2 | 4341.7 | 4161.7 | 4067.8 | 3999.2 |
| 20°    | 4307.6 | 4221.7 | 4007.8 | 3901.0 | 3806.5 |
| 22.5°  | 4196.3 | 4097.7 | 3849.2 | 3703.8 | 3639.8 |
| 25°    | 4085.0 | 3947.7 | 3665.2 | 3489.8 | 3425.3 |
| 27.5°  | 3952.3 | 3806.5 | 3493.9 | 3292.7 | 3194.1 |
| 30°    | 3811.0 | 3648.0 | 3305.4 | 3087.3 | 2971.5 |
| 32.5°  | 3673.9 | 3476.7 | 3126.0 | 2868.9 | 2761.6 |
| 35°    | 3519.9 | 3301.3 | 2924.7 | 2654.9 | 2560.3 |
| 37.5°  | 3369.9 | 3134.2 | 2736.2 | 2440.4 | 2333.7 |
| 40°    | 3211.4 | 2954.7 | 2539.1 | 2235.1 | 2123.8 |
| 42.5°  | 3048.7 | 2774.8 | 2342.4 | 2025.2 | 1918.5 |
| 45°    | 2877.5 | 2590.4 | 2141.1 | 1836.7 | 1734.0 |
| 47.5°  | 2714.8 | 2410.9 | 1948.4 | 1644.1 | 1550.1 |
| 50°    | 2535.0 | 2231.0 | 1759.9 | 1464.2 | 1374.7 |
| 52.5°  | 2359.1 | 2037.9 | 1580.0 | 1297.4 | 1216.2 |
| 55°    | 2187.9 | 1854.0 | 1391.5 | 1134.8 | 1053.5 |
| 57.5°  | 2012.5 | 1670.0 | 1224.7 | 984.9  | 916.3  |
| 60°    | 1832.6 | 1490.1 | 1048.9 | 830.9  | 762.3  |
| 62.5°  | 1657.3 | 1314.7 | 899.0  | 693.7  | 659.6  |
| 65°    | 1477.4 | 1130.3 | 745.1  | 599.7  | 586.5  |
| 67.5°  | 1306.1 | 959.0  | 599.7  | 526.5  | 513.8  |
| 70°    | 1126.2 | 792.3  | 496.6  | 453.8  | 436.6  |
| 72.5°  | 955.0  | 637.8  | 415.2  | 381.1  | 372.5  |
| 75°    | 787.7  | 487.9  | 342.6  | 312.5  | 308.4  |
| 77.5°  | 621.1  | 346.6  | 269.9  | 252.6  | 243.9  |
| 80°    | 466.6  | 248.5  | 205.3  | 188.5  | 188.5  |
| 82.5°  | 325.3  | 167.1  | 141.3  | 132.6  | 132.6  |
| 85°    | 184.0  | 94.1   | 81.3   | 81.3   | 81.3   |
| 87.5°  | 68.6   | 34.1   | 34.1   | 30.0   | 30.0   |
| 90°    | 1.1    | 13.9   | 23.3   | 29.2   | 31.4   |
| 92.5°  | 29.2   | 24.5   | 28.0   | 30.3   | 31.4   |
| 95°    | 75.7   | 37.2   | 45.4   | 51.3   | 50.1   |
| 97.5°  | 136.2  | 40.8   | 59.3   | 63.0   | 64.0   |
| 100°   | 206.3  | 46.7   | 66.4   | 75.7   | 78.0   |
| 102.5° | 283.1  | 280.8  | 68.8   | 81.5   | 85.1   |
| 105°   | 354.1  | 389.1  | 71.1   | 83.9   | 88.5   |
| 107.5° | 436.8  | 465.8  | 73.5   | 86.1   | 90.9   |
| 110°   | 516.1  | 540.4  | 203.9  | 87.4   | 92.0   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 590.6  | 611.5  | 591.8  | 89.7   | 93.2   |
| 115°   | 669.8  | 689.6  | 718.7  | 179.4  | 95.6   |
| 117.5° | 738.5  | 761.8  | 781.7  | 614.9  | 309.9  |
| 120°   | 815.4  | 832.8  | 853.8  | 867.9  | 710.5  |
| 122.5° | 880.5  | 899.2  | 922.6  | 929.6  | 930.8  |
| 125°   | 946.9  | 962.2  | 984.3  | 992.4  | 996.0  |
| 127.5° | 1007.5 | 1023.8 | 1041.5 | 1053.0 | 1054.2 |
| 130°   | 1064.7 | 1083.4 | 1096.1 | 1108.9 | 1107.9 |
| 132.5° | 1123.0 | 1138.1 | 1150.8 | 1161.4 | 1160.3 |
| 135°   | 1171.9 | 1190.6 | 1200.9 | 1212.7 | 1210.3 |
| 137.5° | 1223.0 | 1237.1 | 1248.8 | 1260.4 | 1257.0 |
| 140°   | 1273.1 | 1282.6 | 1295.2 | 1305.7 | 1300.0 |
| 142.5° | 1315.2 | 1323.4 | 1338.5 | 1347.7 | 1341.9 |
| 145°   | 1359.4 | 1358.2 | 1378.0 | 1386.2 | 1380.3 |
| 147.5° | 1397.8 | 1394.3 | 1414.1 | 1419.9 | 1415.4 |
| 150°   | 1435.1 | 1427.0 | 1445.6 | 1452.6 | 1446.7 |
| 152.5° | 1466.5 | 1457.2 | 1474.7 | 1481.8 | 1473.5 |
| 155°   | 1496.8 | 1486.4 | 1500.4 | 1507.3 | 1498.1 |
| 157.5° | 1521.2 | 1512.0 | 1522.5 | 1530.7 | 1521.2 |
| 160°   | 1542.3 | 1535.3 | 1542.3 | 1549.2 | 1541.1 |
| 162.5° | 1560.8 | 1554.0 | 1559.7 | 1567.9 | 1557.4 |
| 165°   | 1577.2 | 1570.3 | 1573.7 | 1581.8 | 1573.7 |
| 167.5° | 1590.0 | 1583.0 | 1586.6 | 1594.7 | 1584.2 |
| 170°   | 1600.5 | 1593.5 | 1595.9 | 1604.0 | 1593.5 |
| 172.5° | 1607.5 | 1600.5 | 1602.9 | 1611.0 | 1600.5 |
| 175°   | 1613.3 | 1605.1 | 1607.5 | 1615.6 | 1604.0 |
| 177.5° | 1615.6 | 1607.5 | 1608.7 | 1616.8 | 1606.3 |
| 180°   | 1609.8 | 1609.8 | 1609.8 | 1609.8 | 1609.8 |

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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 | 14.47            | 15.47 | 15.27 | 16.28 | 17.29 | 10.43          | 11.43 | 11.23 | 12.24 | 13.25 |
|                 | 3H   | 16.16            | 17.05 | 16.97 | 17.87 | 18.91 | 11.63          | 12.52 | 12.44 | 13.34 | 14.37 |
|                 | 4H   | 16.77            | 17.61 | 17.60 | 18.44 | 19.49 | 12.08          | 12.92 | 12.91 | 13.75 | 14.80 |
|                 | 6H   | 17.20            | 17.97 | 18.04 | 18.81 | 19.87 | 12.40          | 13.18 | 13.24 | 14.02 | 15.07 |
|                 | 8H   | 17.32            | 18.06 | 18.18 | 18.92 | 19.98 | 12.49          | 13.23 | 13.35 | 14.09 | 15.15 |
|                 | 12H  | 17.39            | 18.09 | 18.25 | 18.94 | 20.03 | 12.54          | 13.24 | 13.40 | 14.09 | 15.18 |
| 4H              | 2H   | 14.51            | 15.35 | 15.34 | 16.18 | 17.22 | 11.04          | 11.88 | 11.88 | 12.72 | 13.76 |
|                 | 3H   | 16.35            | 17.04 | 17.19 | 17.91 | 18.97 | 12.40          | 13.10 | 13.25 | 13.97 | 15.03 |
|                 | 4H   | 17.04            | 17.67 | 17.90 | 18.54 | 19.63 | 12.95          | 13.58 | 13.81 | 14.45 | 15.54 |
|                 | 6H   | 17.56            | 18.11 | 18.43 | 19.00 | 20.09 | 13.37          | 13.92 | 14.25 | 14.81 | 15.90 |
|                 | 8H   | 17.74            | 18.25 | 18.61 | 19.13 | 20.23 | 13.50          | 14.01 | 14.38 | 14.89 | 16.00 |
|                 | 12H  | 17.84            | 18.29 | 18.73 | 19.20 | 20.31 | 13.57          | 14.03 | 14.46 | 14.93 | 16.04 |
| 8H              | 4H   | 17.02            | 17.53 | 17.90 | 18.41 | 19.52 | 13.24          | 13.75 | 14.12 | 14.63 | 15.74 |
|                 | 6H   | 17.59            | 18.01 | 18.49 | 18.93 | 20.04 | 13.76          | 14.18 | 14.66 | 15.10 | 16.21 |
|                 | 8H   | 17.80            | 18.17 | 18.71 | 19.09 | 20.21 | 13.94          | 14.32 | 14.86 | 15.24 | 16.35 |
|                 | 12H  | 17.94            | 18.27 | 18.86 | 19.18 | 20.35 | 14.06          | 14.39 | 14.98 | 15.30 | 16.48 |
| 12H             | 4H   | 16.98            | 17.44 | 17.87 | 18.34 | 19.45 | 13.25          | 13.71 | 14.15 | 14.61 | 15.72 |
|                 | 6H   | 17.56            | 17.93 | 18.48 | 18.85 | 19.97 | 13.80          | 14.18 | 14.72 | 15.10 | 16.22 |
|                 | 8H   | 17.78            | 18.11 | 18.70 | 19.02 | 20.20 | 14.02          | 14.34 | 14.93 | 15.26 | 16.43 |