

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: P909362

Luminaire Tested: DFN2DIP-SQ3F0-120D050US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909362  
REPORT IS A COMBINATION OF REPORTS P899896 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D050US840-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

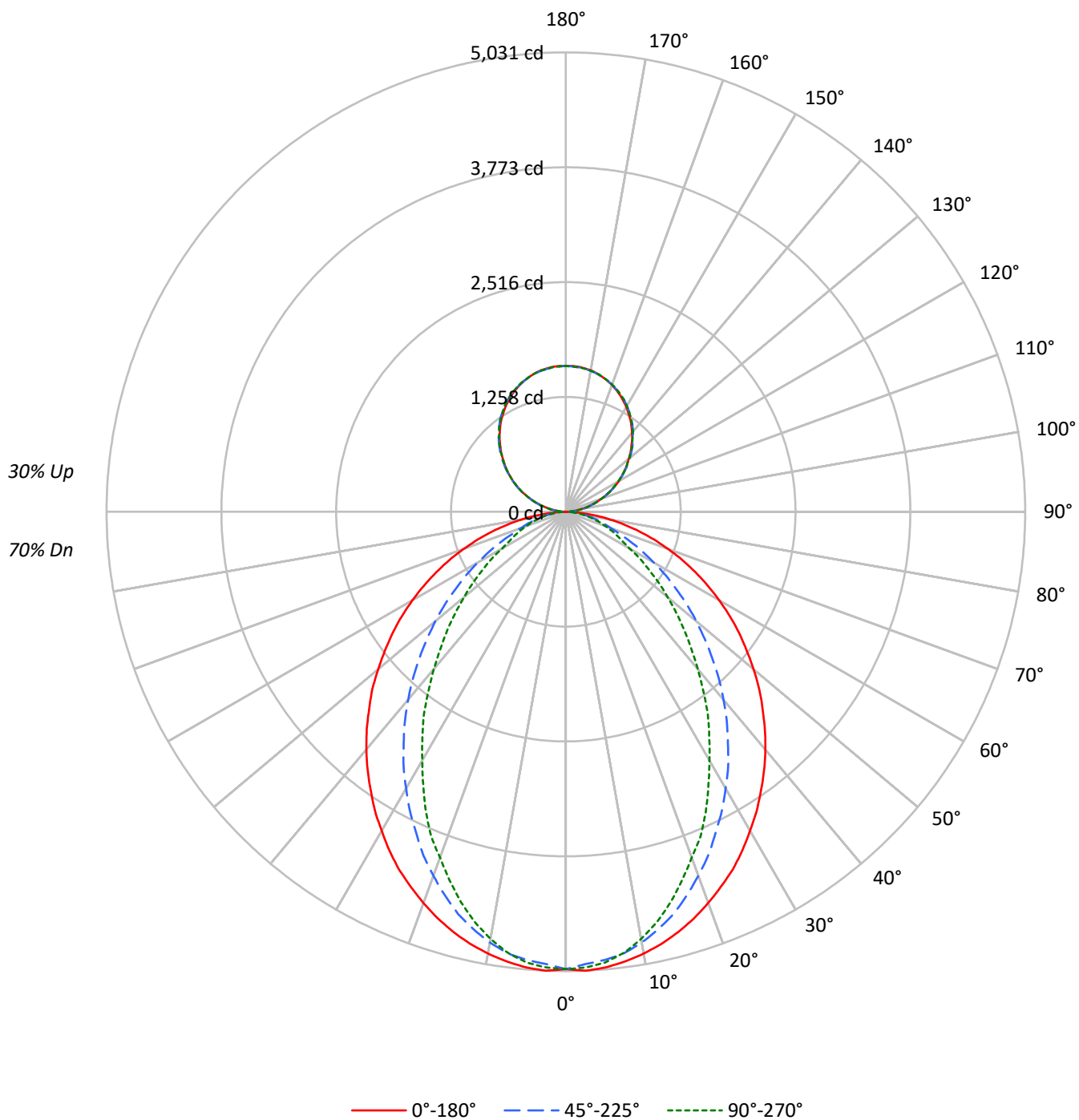
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14769.2 lumens  
Efficiency: N/A  
Efficacy: 90.8 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



TEST NUMBER: P909362

CATALOG NUMBER: DFN2DIP-SQ3F0-120D050US840-RLFL

**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   | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 84 | 84 | 84 | 74 | 74 | 74 |
| 1   | 103 | 99  | 95  | 92  | 97  | 94  | 90  | 87  | 84 | 81 | 79 | 75 | 73 | 71 | 67 | 65 | 64 |
| 2   | 94  | 87  | 81  | 76  | 89  | 83  | 77  | 73  | 74 | 70 | 67 | 67 | 63 | 61 | 60 | 57 | 55 |
| 3   | 86  | 77  | 70  | 64  | 82  | 73  | 67  | 62  | 66 | 61 | 57 | 60 | 56 | 52 | 53 | 50 | 48 |
| 4   | 80  | 69  | 61  | 55  | 75  | 66  | 58  | 53  | 59 | 54 | 49 | 54 | 49 | 45 | 48 | 45 | 42 |
| 5   | 73  | 62  | 54  | 48  | 69  | 59  | 52  | 46  | 54 | 48 | 43 | 48 | 44 | 40 | 44 | 40 | 37 |
| 6   | 68  | 56  | 48  | 42  | 64  | 53  | 46  | 41  | 49 | 42 | 38 | 44 | 39 | 35 | 40 | 36 | 33 |
| 7   | 63  | 51  | 43  | 37  | 60  | 49  | 41  | 36  | 44 | 38 | 34 | 40 | 35 | 32 | 37 | 33 | 29 |
| 8   | 59  | 46  | 39  | 33  | 56  | 44  | 37  | 32  | 41 | 35 | 30 | 37 | 32 | 28 | 34 | 30 | 27 |
| 9   | 55  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 38 | 32 | 27 | 34 | 29 | 26 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 49  | 38  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 24 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5739 | 5739 | 5739 |
| 5°  | 5744 | 5644 | 5682 |
| 10° | 5684 | 5529 | 5495 |
| 15° | 5602 | 5343 | 5208 |
| 20° | 5495 | 5087 | 4856 |
| 25° | 5385 | 4802 | 4515 |
| 30° | 5239 | 4509 | 4085 |
| 35° | 5095 | 4195 | 3706 |
| 40° | 4949 | 3870 | 3273 |
| 45° | 4780 | 3511 | 2880 |
| 50° | 4604 | 3148 | 2497 |
| 55° | 4421 | 2761 | 2129 |
| 60° | 4208 | 2356 | 1750 |
| 65° | 3963 | 1946 | 1573 |
| 70° | 3665 | 1563 | 1421 |
| 75° | 3291 | 1369 | 1289 |
| 80° | 2750 | 1136 | 1111 |
| 85° | 1865 | 740  | 824  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4780 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 469.4   | 3.2       |
| 10°-20°   | 1288.6  | 8.7       |
| 20°-30°   | 1809.2  | 12.2      |
| 30°-40°   | 1972.1  | 13.4      |
| 40°-50°   | 1812.6  | 12.3      |
| 50°-60°   | 1423.5  | 9.6       |
| 60°-70°   | 926.6   | 6.3       |
| 70°-80°   | 476.9   | 3.2       |
| 80°-90°   | 126.3   | 0.9       |
| 90°-100°  | 98.8    | 0.7       |
| 100°-110° | 314.0   | 2.1       |
| 110°-120° | 537.3   | 3.6       |
| 120°-130° | 706.6   | 4.8       |
| 130°-140° | 793.2   | 5.4       |
| 140°-150° | 777.8   | 5.3       |
| 150°-160° | 652.5   | 4.4       |
| 160°-170° | 432.7   | 2.9       |
| 170°-180° | 151.2   | 1.0       |
| 0°-30°    | 3567.2  | 24.2      |
| 0°-40°    | 5539.3  | 37.5      |
| 0°-60°    | 8775.3  | 59.4      |
| 0°-90°    | 10305.1 | 69.8      |
| 90°-120°  | 950.1   | 6.4       |
| 90°-150°  | 3227.7  | 21.9      |
| 90°-180°  | 4464.0  | 30.2      |
| 0°-180°   | 14769.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5008 | 5008  | 5008 | 5008  | 5008 |      |
| 5°   | 5008 | 4986  | 4927 | 4968  | 4954 | 475  |
| 15°  | 4764 | 4714  | 4560 | 4474  | 4429 | 1342 |
| 25°  | 4324 | 4179  | 3880 | 3694  | 3626 | 1989 |
| 35°  | 3726 | 3495  | 3096 | 2810  | 2710 | 2332 |
| 45°  | 3046 | 2742  | 2266 | 1944  | 1836 | 2352 |
| 55°  | 2316 | 1963  | 1473 | 1201  | 1115 | 2070 |
| 65°  | 1564 | 1196  | 789  | 635   | 621  | 1550 |
| 75°  | 834  | 516   | 363  | 331   | 326  | 882  |
| 85°  | 195  | 100   | 86   | 86    | 86   | 224  |
| 90°  | 1    | 17    | 47   | 44    | 46   | 14   |
| 95°  | 70   | 84    | 86   | 86    | 84   | 78   |
| 105° | 290  | 294   | 297  | 299   | 299  | 306  |
| 115° | 539  | 547   | 544  | 543   | 539  | 533  |
| 125° | 784  | 796   | 792  | 788   | 787  | 701  |
| 135° | 1014 | 1029  | 1032 | 1031  | 1027 | 784  |
| 145° | 1232 | 1241  | 1249 | 1250  | 1245 | 769  |
| 155° | 1408 | 1412  | 1416 | 1423  | 1419 | 648  |
| 165° | 1532 | 1530  | 1530 | 1540  | 1533 | 432  |
| 175° | 1594 | 1590  | 1587 | 1597  | 1589 | 151  |
| 180° | 1597 | 1597  | 1597 | 1597  | 1597 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 5008.5 | 5008.5 | 5008.5 | 5008.5 | 5008.5 |
| 2.5°   | 5031.2 | 5008.5 | 4958.5 | 5004.2 | 4995.0 |
| 5°     | 5008.5 | 4985.9 | 4926.7 | 4967.6 | 4954.2 |
| 7.5°   | 4967.6 | 4940.7 | 4877.2 | 4895.0 | 4872.4 |
| 10°    | 4913.3 | 4881.6 | 4791.1 | 4777.2 | 4750.3 |
| 12.5°  | 4845.4 | 4804.6 | 4681.9 | 4655.1 | 4605.1 |
| 15°    | 4763.7 | 4713.7 | 4559.8 | 4473.7 | 4428.6 |
| 17.5°  | 4668.5 | 4595.9 | 4405.4 | 4306.0 | 4233.4 |
| 20°    | 4559.8 | 4469.0 | 4242.4 | 4129.4 | 4029.4 |
| 22.5°  | 4442.0 | 4337.7 | 4074.6 | 3920.7 | 3852.9 |
| 25°    | 4324.2 | 4178.9 | 3879.8 | 3694.2 | 3625.9 |
| 27.5°  | 4183.8 | 4029.4 | 3698.5 | 3485.6 | 3381.1 |
| 30°    | 4034.2 | 3861.6 | 3499.0 | 3268.1 | 3145.5 |
| 32.5°  | 3889.0 | 3680.3 | 3309.0 | 3036.9 | 2923.4 |
| 35°    | 3726.0 | 3494.6 | 3095.9 | 2810.4 | 2710.3 |
| 37.5°  | 3567.2 | 3317.7 | 2896.4 | 2583.3 | 2470.3 |
| 40°    | 3399.4 | 3127.8 | 2687.8 | 2366.0 | 2248.2 |
| 42.5°  | 3227.2 | 2937.3 | 2479.5 | 2143.8 | 2030.8 |
| 45°    | 3046.0 | 2742.1 | 2266.4 | 1944.3 | 1835.5 |
| 47.5°  | 2873.8 | 2552.1 | 2062.5 | 1740.4 | 1640.8 |
| 50°    | 2683.4 | 2361.7 | 1863.0 | 1549.9 | 1455.2 |
| 52.5°  | 2497.3 | 2157.3 | 1672.5 | 1373.4 | 1287.4 |
| 55°    | 2316.0 | 1962.6 | 1473.0 | 1201.2 | 1115.2 |
| 57.5°  | 2130.3 | 1767.8 | 1296.5 | 1042.6 | 970.0  |
| 60°    | 1940.0 | 1577.3 | 1110.3 | 879.6  | 807.0  |
| 62.5°  | 1754.3 | 1391.7 | 951.7  | 734.4  | 698.2  |
| 65°    | 1563.9 | 1196.5 | 788.7  | 634.8  | 620.9  |
| 67.5°  | 1382.6 | 1015.1 | 634.8  | 557.3  | 543.9  |
| 70°    | 1192.1 | 838.7  | 525.6  | 480.4  | 462.1  |
| 72.5°  | 1010.9 | 675.2  | 439.5  | 403.4  | 394.4  |
| 75°    | 833.8  | 516.4  | 362.6  | 330.8  | 326.5  |
| 77.5°  | 657.4  | 366.9  | 285.7  | 267.4  | 258.2  |
| 80°    | 493.9  | 263.1  | 217.3  | 199.5  | 199.5  |
| 82.5°  | 344.4  | 176.9  | 149.6  | 140.4  | 140.4  |
| 85°    | 194.8  | 99.6   | 86.0   | 86.0   | 86.0   |
| 87.5°  | 72.6   | 36.1   | 36.1   | 31.7   | 31.7   |
| 90°    | 1.4    | 17.4   | 47.2   | 44.3   | 45.7   |
| 92.5°  | 29.9   | 40.4   | 41.9   | 43.3   | 43.3   |
| 95°    | 70.3   | 83.8   | 86.1   | 86.1   | 83.8   |
| 97.5°  | 116.9  | 129.5  | 134.8  | 134.8  | 134.8  |
| 100°   | 170.9  | 182.0  | 185.8  | 185.8  | 184.4  |
| 102.5° | 227.7  | 235.9  | 241.2  | 242.7  | 241.2  |
| 105°   | 289.8  | 293.7  | 296.6  | 298.9  | 298.9  |
| 107.5° | 351.4  | 357.2  | 357.2  | 358.2  | 351.4  |
| 110°   | 411.1  | 418.9  | 418.9  | 418.9  | 415.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 475.6  | 483.8  | 482.4  | 478.6  | 475.6  |
| 115°   | 539.2  | 546.9  | 544.5  | 543.1  | 539.2  |
| 117.5° | 602.3  | 612.9  | 606.1  | 602.3  | 598.4  |
| 120°   | 665.8  | 676.4  | 665.8  | 665.8  | 661.5  |
| 122.5° | 723.6  | 737.1  | 730.3  | 726.5  | 723.6  |
| 125°   | 784.3  | 796.3  | 792.4  | 788.1  | 786.7  |
| 127.5° | 843.4  | 858.4  | 853.1  | 847.3  | 843.4  |
| 130°   | 898.9  | 916.2  | 913.7  | 910.9  | 905.5  |
| 132.5° | 961.0  | 974.4  | 975.4  | 968.7  | 964.8  |
| 135°   | 1014.4 | 1029.3 | 1032.2 | 1030.8 | 1026.9 |
| 137.5° | 1074.1 | 1086.1 | 1088.5 | 1087.5 | 1081.8 |
| 140°   | 1126.5 | 1138.6 | 1145.3 | 1145.3 | 1140.0 |
| 142.5° | 1180.4 | 1192.6 | 1196.4 | 1197.8 | 1192.6 |
| 145°   | 1231.5 | 1241.1 | 1248.8 | 1250.3 | 1245.0 |
| 147.5° | 1277.3 | 1289.3 | 1295.1 | 1297.5 | 1292.1 |
| 150°   | 1324.4 | 1332.6 | 1337.9 | 1342.2 | 1337.9 |
| 152.5° | 1366.3 | 1374.5 | 1381.2 | 1386.5 | 1381.2 |
| 155°   | 1408.2 | 1412.0 | 1416.3 | 1423.1 | 1418.8 |
| 157.5° | 1444.3 | 1447.1 | 1449.6 | 1459.3 | 1452.5 |
| 160°   | 1476.5 | 1479.5 | 1480.9 | 1489.0 | 1483.3 |
| 162.5° | 1506.4 | 1506.4 | 1507.8 | 1517.0 | 1510.3 |
| 165°   | 1532.0 | 1530.5 | 1530.5 | 1540.1 | 1533.4 |
| 167.5° | 1555.0 | 1550.6 | 1550.6 | 1560.3 | 1553.6 |
| 170°   | 1572.4 | 1568.5 | 1567.1 | 1576.7 | 1568.5 |
| 172.5° | 1584.4 | 1580.5 | 1579.1 | 1588.7 | 1580.5 |
| 175°   | 1594.1 | 1590.1 | 1587.3 | 1596.9 | 1588.7 |
| 177.5° | 1599.3 | 1595.5 | 1592.6 | 1600.7 | 1592.6 |
| 180°   | 1596.9 | 1596.9 | 1596.9 | 1596.9 | 1596.9 |

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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 | 14.86            | 15.88 | 15.63 | 16.67 | 17.63 | 10.82          | 11.84 | 11.59 | 12.63 | 13.59 |
|                 | 3H   | 16.55            | 17.46 | 17.33 | 18.26 | 19.25 | 12.02          | 12.93 | 12.80 | 13.73 | 14.72 |
|                 | 4H   | 17.16            | 18.02 | 17.96 | 18.83 | 19.83 | 12.47          | 13.33 | 13.28 | 14.14 | 15.14 |
|                 | 6H   | 17.59            | 18.38 | 18.40 | 19.20 | 20.21 | 12.79          | 13.59 | 13.61 | 14.41 | 15.42 |
|                 | 8H   | 17.72            | 18.47 | 18.54 | 19.31 | 20.33 | 12.89          | 13.64 | 13.71 | 14.48 | 15.50 |
|                 | 12H  | 17.78            | 18.50 | 18.62 | 19.33 | 20.37 | 12.93          | 13.65 | 13.77 | 14.48 | 15.53 |
| 4H              | 2H   | 14.90            | 15.76 | 15.71 | 16.57 | 17.57 | 11.44          | 12.30 | 12.24 | 13.11 | 14.11 |
|                 | 3H   | 16.74            | 17.45 | 17.56 | 18.30 | 19.32 | 12.80          | 13.51 | 13.62 | 14.35 | 15.37 |
|                 | 4H   | 17.43            | 18.08 | 18.27 | 18.93 | 19.97 | 13.35          | 14.00 | 14.18 | 14.84 | 15.88 |
|                 | 6H   | 17.96            | 18.52 | 18.81 | 19.38 | 20.43 | 13.77          | 14.33 | 14.62 | 15.19 | 16.25 |
|                 | 8H   | 18.13            | 18.66 | 18.99 | 19.52 | 20.58 | 13.90          | 14.42 | 14.75 | 15.28 | 16.34 |
|                 | 12H  | 18.23            | 18.70 | 19.11 | 19.59 | 20.65 | 13.97          | 14.44 | 14.84 | 15.32 | 16.39 |
| 8H              | 4H   | 17.41            | 17.94 | 18.27 | 18.80 | 19.86 | 13.64          | 14.16 | 14.49 | 15.02 | 16.08 |
|                 | 6H   | 17.98            | 18.42 | 18.86 | 19.32 | 20.38 | 14.15          | 14.59 | 15.03 | 15.49 | 16.55 |
|                 | 8H   | 18.20            | 18.58 | 19.09 | 19.48 | 20.56 | 14.34          | 14.72 | 15.23 | 15.62 | 16.70 |
|                 | 12H  | 18.34            | 18.68 | 19.23 | 19.57 | 20.70 | 14.46          | 14.80 | 15.36 | 15.69 | 16.82 |
| 12H             | 4H   | 17.38            | 17.85 | 18.25 | 18.73 | 19.80 | 13.65          | 14.12 | 14.52 | 15.00 | 16.07 |
|                 | 6H   | 17.96            | 18.34 | 18.85 | 19.24 | 20.32 | 14.20          | 14.59 | 15.09 | 15.48 | 16.56 |
|                 | 8H   | 18.18            | 18.52 | 19.08 | 19.41 | 20.55 | 14.41          | 14.75 | 15.31 | 15.64 | 16.78 |