

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: P912512

Luminaire Tested: DFN2DIP-TR2F0-050D040US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912512  
REPORT IS A COMBINATION OF REPORTS P900247 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-050D040US850-FLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

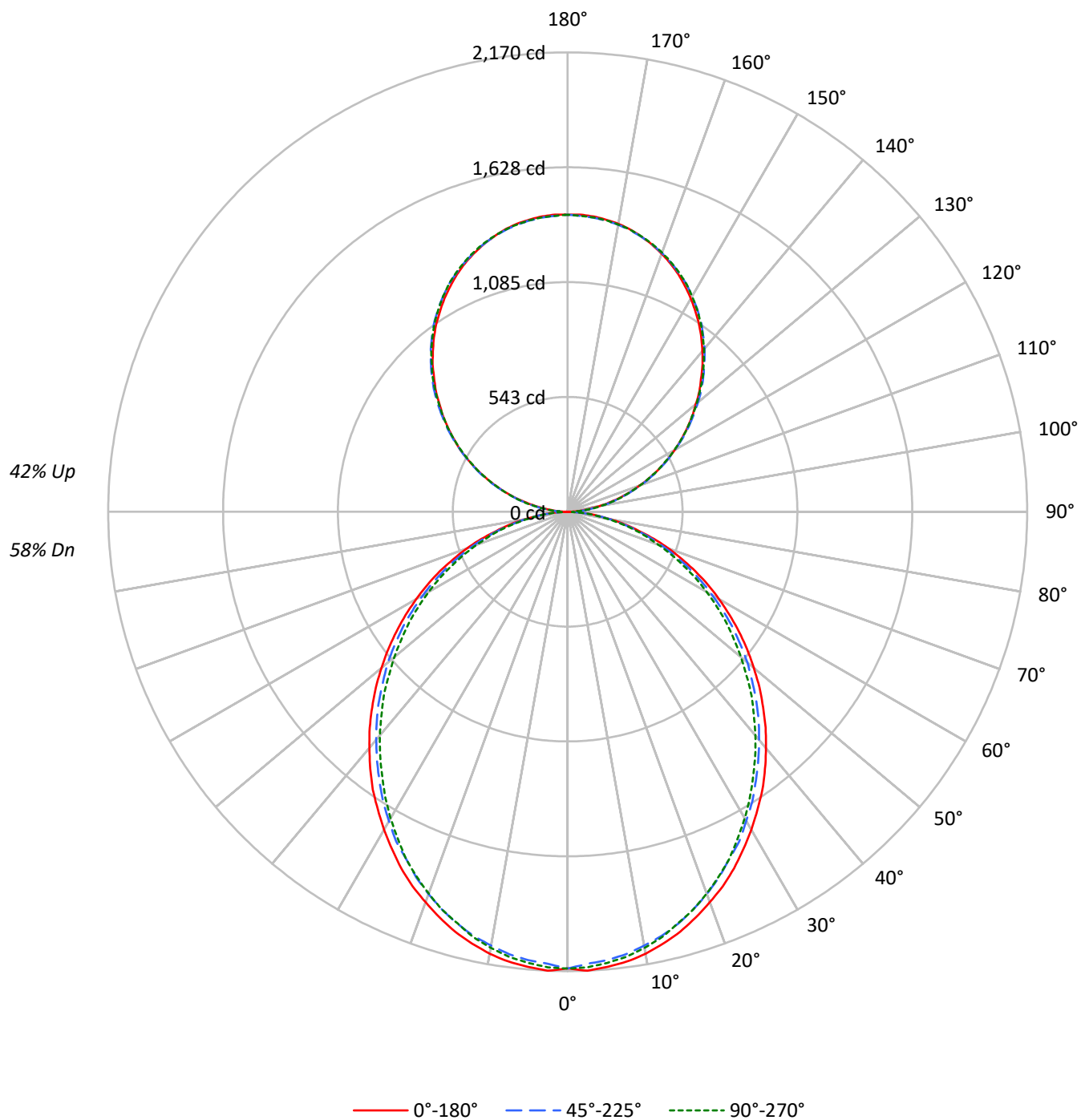
Lumens per Lamp: N/A  
Luminaire Lumens: 9415.4 lumens  
Efficiency: N/A  
Efficacy: 122.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 76.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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: P912512

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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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 64 | 64 | 64 |
| 1   | 100 | 95  | 91  | 88  | 93  | 89  | 86  | 82  | 77 | 75 | 72 | 66 | 65 | 63 | 56 | 55 | 54 |
| 2   | 91  | 83  | 77  | 72  | 84  | 78  | 72  | 68  | 68 | 64 | 60 | 58 | 55 | 52 | 50 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 69  | 62  | 57  | 60 | 55 | 50 | 52 | 48 | 44 | 44 | 41 | 39 |
| 4   | 76  | 65  | 57  | 51  | 70  | 61  | 54  | 48  | 53 | 47 | 43 | 46 | 42 | 38 | 39 | 36 | 33 |
| 5   | 70  | 58  | 50  | 43  | 65  | 54  | 47  | 41  | 48 | 42 | 37 | 41 | 37 | 33 | 35 | 32 | 29 |
| 6   | 64  | 52  | 44  | 38  | 60  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 33 | 29 | 32 | 29 | 26 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 32  | 39 | 33 | 29 | 34 | 29 | 26 | 29 | 26 | 23 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 36 | 30 | 26 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 33 | 27 | 23 | 29 | 24 | 21 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 23  | 30 | 25 | 21 | 27 | 22 | 19 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4812 | 4812 | 4812 |
| 5°  | 4813 | 4734 | 4769 |
| 10° | 4767 | 4660 | 4696 |
| 15° | 4689 | 4573 | 4587 |
| 20° | 4588 | 4455 | 4476 |
| 25° | 4486 | 4317 | 4348 |
| 30° | 4361 | 4188 | 4189 |
| 35° | 4241 | 4037 | 4020 |
| 40° | 4096 | 3885 | 3859 |
| 45° | 3949 | 3731 | 3693 |
| 50° | 3790 | 3570 | 3503 |
| 55° | 3622 | 3383 | 3326 |
| 60° | 3432 | 3164 | 3123 |
| 65° | 3223 | 2934 | 2884 |
| 70° | 2958 | 2654 | 2625 |
| 75° | 2593 | 2319 | 2374 |
| 80° | 2150 | 1892 | 1919 |
| 85° | 1464 | 1193 | 1192 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3949 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 203.1  | 2.2       |
| 10°-20°   | 571.4  | 6.1       |
| 20°-30°   | 839.7  | 8.9       |
| 30°-40°   | 975.2  | 10.4      |
| 40°-50°   | 974.0  | 10.3      |
| 50°-60°   | 849.3  | 9.0       |
| 60°-70°   | 627.9  | 6.7       |
| 70°-80°   | 355.2  | 3.8       |
| 80°-90°   | 97.7   | 1.0       |
| 90°-100°  | 86.8   | 0.9       |
| 100°-110° | 275.8  | 2.9       |
| 110°-120° | 472.0  | 5.0       |
| 120°-130° | 620.8  | 6.6       |
| 130°-140° | 696.8  | 7.4       |
| 140°-150° | 683.3  | 7.3       |
| 150°-160° | 573.2  | 6.1       |
| 160°-170° | 380.1  | 4.0       |
| 170°-180° | 132.9  | 1.4       |
| 0°-30°    | 1614.1 | 17.1      |
| 0°-40°    | 2589.4 | 27.5      |
| 0°-60°    | 4412.7 | 46.9      |
| 0°-90°    | 5493.5 | 58.3      |
| 90°-120°  | 834.7  | 8.9       |
| 90°-150°  | 2835.6 | 30.1      |
| 90°-180°  | 3922.0 | 41.7      |
| 0°-180°   | 9415.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2158 | 2158  | 2158 | 2158  | 2158 |      |
| 5°   | 2158 | 2150  | 2126 | 2143  | 2139 | 205  |
| 15°  | 2054 | 2042  | 2014 | 2023  | 2012 | 578  |
| 25°  | 1859 | 1842  | 1807 | 1811  | 1807 | 855  |
| 35°  | 1604 | 1583  | 1550 | 1537  | 1527 | 1001 |
| 45°  | 1305 | 1290  | 1259 | 1237  | 1228 | 1007 |
| 55°  | 988  | 975   | 950  | 925   | 915  | 883  |
| 65°  | 666  | 654   | 633  | 614   | 604  | 659  |
| 75°  | 348  | 344   | 334  | 322   | 326  | 372  |
| 85°  | 85   | 83    | 81   | 75    | 73   | 95   |
| 90°  | 1    | 15    | 42   | 39    | 40   | 9    |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2157.6 | 2157.6 | 2157.6 | 2157.6 | 2157.6 |
| 2.5°   | 2170.1 | 2159.8 | 2136.9 | 2157.6 | 2153.7 |
| 5°     | 2157.6 | 2149.5 | 2126.5 | 2143.0 | 2139.2 |
| 7.5°   | 2143.0 | 2130.7 | 2107.9 | 2124.6 | 2120.4 |
| 10°    | 2120.4 | 2105.9 | 2081.0 | 2097.5 | 2091.4 |
| 12.5°  | 2089.1 | 2076.8 | 2052.0 | 2062.3 | 2058.1 |
| 15°    | 2053.9 | 2041.6 | 2014.5 | 2022.9 | 2012.5 |
| 17.5°  | 2010.3 | 1998.0 | 1970.9 | 1981.2 | 1970.9 |
| 20°    | 1962.6 | 1950.3 | 1921.2 | 1927.3 | 1919.2 |
| 22.5°  | 1915.0 | 1896.3 | 1869.2 | 1869.2 | 1865.0 |
| 25°    | 1858.9 | 1842.4 | 1807.1 | 1811.1 | 1807.1 |
| 27.5°  | 1796.6 | 1782.1 | 1755.2 | 1749.0 | 1738.7 |
| 30°    | 1734.5 | 1717.8 | 1686.8 | 1680.6 | 1672.3 |
| 32.5°  | 1668.0 | 1655.7 | 1622.5 | 1609.9 | 1601.6 |
| 35°    | 1603.7 | 1583.1 | 1549.8 | 1537.3 | 1527.0 |
| 37.5°  | 1531.1 | 1512.5 | 1479.2 | 1464.7 | 1454.3 |
| 40°    | 1456.6 | 1439.8 | 1406.5 | 1388.0 | 1379.7 |
| 42.5°  | 1383.9 | 1367.2 | 1334.1 | 1313.2 | 1300.9 |
| 45°    | 1305.1 | 1290.5 | 1259.3 | 1236.6 | 1228.2 |
| 47.5°  | 1228.2 | 1213.7 | 1180.5 | 1157.6 | 1145.3 |
| 50°    | 1147.3 | 1136.9 | 1107.9 | 1078.8 | 1068.4 |
| 52.5°  | 1068.4 | 1053.9 | 1027.0 | 1004.2 | 989.7  |
| 55°    | 987.7  | 975.1  | 950.2  | 925.3  | 915.0  |
| 57.5°  | 906.6  | 896.3  | 869.2  | 844.4  | 836.0  |
| 60°    | 825.7  | 817.6  | 788.5  | 765.5  | 759.4  |
| 62.5°  | 746.9  | 732.4  | 711.6  | 690.9  | 682.6  |
| 65°    | 666.1  | 653.5  | 632.8  | 614.2  | 603.7  |
| 67.5°  | 583.1  | 572.6  | 554.1  | 539.5  | 531.1  |
| 70°    | 506.3  | 497.9  | 479.2  | 464.7  | 456.6  |
| 72.5°  | 427.5  | 419.1  | 408.8  | 394.2  | 388.0  |
| 75°    | 348.4  | 344.5  | 333.9  | 321.6  | 325.8  |
| 77.5°  | 278.0  | 269.6  | 265.5  | 259.3  | 253.2  |
| 80°    | 207.6  | 205.4  | 201.2  | 195.1  | 190.9  |
| 82.5°  | 141.1  | 141.1  | 139.1  | 130.8  | 130.8  |
| 85°    | 84.9   | 83.0   | 81.0   | 74.6   | 72.6   |
| 87.5°  | 37.4   | 33.3   | 29.1   | 22.8   | 20.7   |
| 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  |



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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 |

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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 | 13.34            | 14.28 | 14.22 | 15.18 | 16.33 | 12.91          | 13.86 | 13.80 | 14.76 | 15.91 |
|                 | 3H   | 14.98            | 15.83 | 15.87 | 16.74 | 17.91 | 14.52          | 15.36 | 15.41 | 16.28 | 17.45 |
|                 | 4H   | 15.56            | 16.36 | 16.47 | 17.27 | 18.45 | 15.10          | 15.90 | 16.01 | 16.81 | 17.99 |
|                 | 6H   | 15.94            | 16.68 | 16.86 | 17.60 | 18.80 | 15.48          | 16.22 | 16.40 | 17.14 | 18.34 |
|                 | 8H   | 16.04            | 16.74 | 16.97 | 17.68 | 18.88 | 15.58          | 16.28 | 16.51 | 17.22 | 18.42 |
|                 | 12H  | 16.08            | 16.75 | 17.02 | 17.69 | 18.91 | 15.62          | 16.29 | 16.55 | 17.22 | 18.44 |
| 4H              | 2H   | 13.80            | 14.60 | 14.71 | 15.52 | 16.70 | 13.46          | 14.26 | 14.38 | 15.18 | 16.36 |
|                 | 3H   | 15.65            | 16.31 | 16.57 | 17.26 | 18.46 | 15.26          | 15.93 | 16.19 | 16.88 | 18.07 |
|                 | 4H   | 16.34            | 16.95 | 17.28 | 17.90 | 19.12 | 15.95          | 16.56 | 16.89 | 17.50 | 18.72 |
|                 | 6H   | 16.84            | 17.37 | 17.79 | 18.34 | 19.56 | 16.45          | 16.97 | 17.40 | 17.94 | 19.16 |
|                 | 8H   | 16.98            | 17.47 | 17.93 | 18.43 | 19.67 | 16.58          | 17.08 | 17.54 | 18.04 | 19.27 |
|                 | 12H  | 17.05            | 17.49 | 18.02 | 18.47 | 19.71 | 16.64          | 17.09 | 17.61 | 18.06 | 19.31 |
| 8H              | 4H   | 16.54            | 17.03 | 17.49 | 17.99 | 19.23 | 16.19          | 16.68 | 17.14 | 17.64 | 18.87 |
|                 | 6H   | 17.14            | 17.55 | 18.12 | 18.55 | 19.79 | 16.79          | 17.20 | 17.77 | 18.20 | 19.44 |
|                 | 8H   | 17.35            | 17.71 | 18.34 | 18.70 | 19.95 | 16.99          | 17.35 | 17.98 | 18.35 | 19.60 |
|                 | 12H  | 17.47            | 17.79 | 18.46 | 18.77 | 20.07 | 17.10          | 17.42 | 18.09 | 18.40 | 19.70 |
| 12H             | 4H   | 16.52            | 16.97 | 17.50 | 17.95 | 19.19 | 16.18          | 16.62 | 17.15 | 17.60 | 18.84 |
|                 | 6H   | 17.17            | 17.53 | 18.16 | 18.52 | 19.77 | 16.83          | 17.19 | 17.82 | 18.18 | 19.43 |
|                 | 8H   | 17.40            | 17.71 | 18.39 | 18.70 | 20.00 | 17.05          | 17.37 | 18.04 | 18.35 | 19.65 |