

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: P907056

Luminaire Tested: DFN2DIP-TR2F0-050D040US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907056  
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-TR2F0-050D040US835-FLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

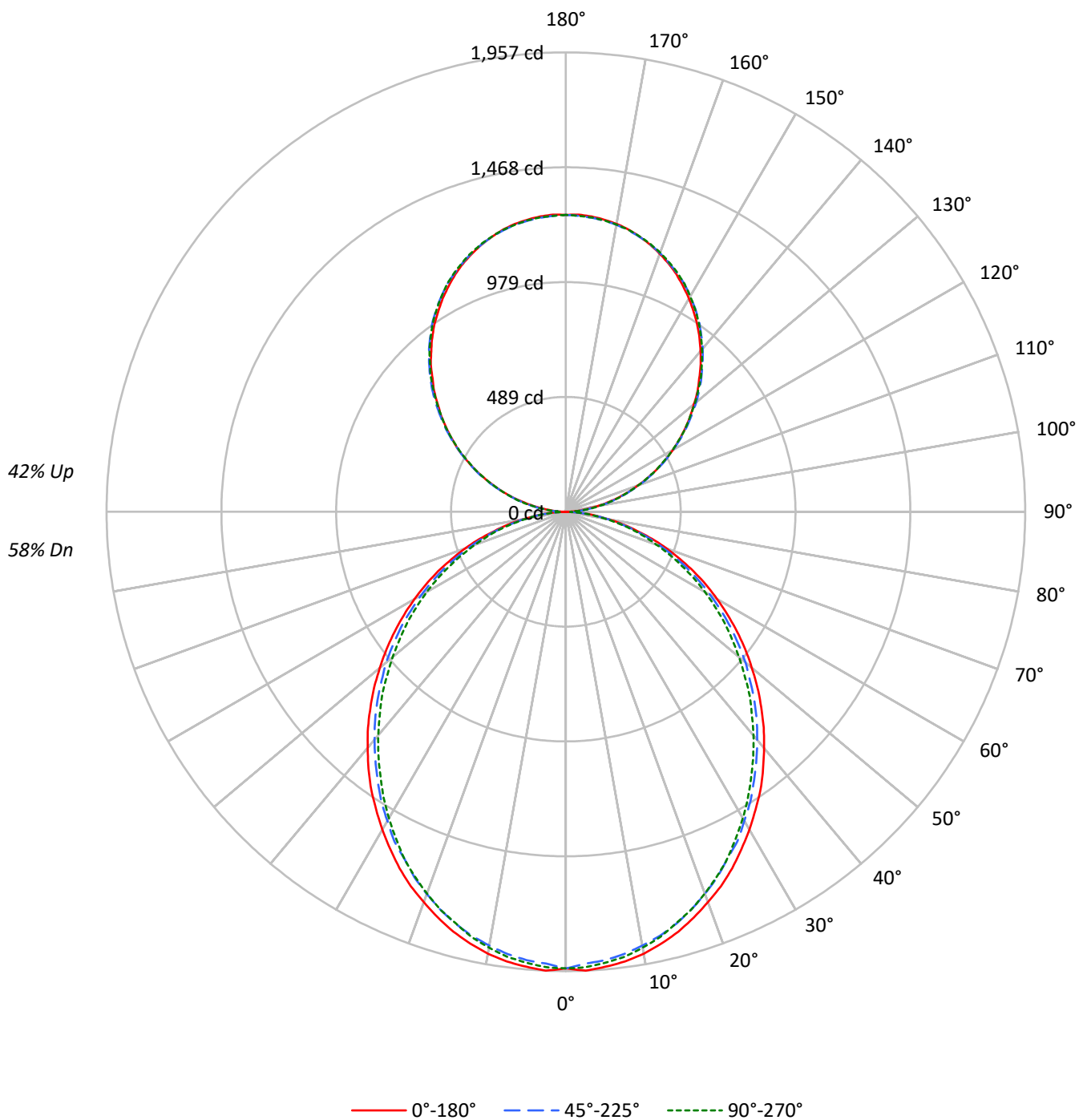
Lumens per Lamp: N/A  
Luminaire Lumens: 8490.0 lumens  
Efficiency: N/A  
Efficacy: 110.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

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



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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°  | 4339 | 4339 | 4339 |
| 5°  | 4340 | 4269 | 4300 |
| 10° | 4298 | 4202 | 4235 |
| 15° | 4228 | 4123 | 4136 |
| 20° | 4137 | 4018 | 4036 |
| 25° | 4045 | 3893 | 3921 |
| 30° | 3932 | 3777 | 3777 |
| 35° | 3824 | 3641 | 3625 |
| 40° | 3693 | 3503 | 3480 |
| 45° | 3561 | 3365 | 3330 |
| 50° | 3417 | 3219 | 3159 |
| 55° | 3266 | 3051 | 2999 |
| 60° | 3094 | 2853 | 2816 |
| 65° | 2906 | 2645 | 2600 |
| 70° | 2667 | 2393 | 2367 |
| 75° | 2338 | 2091 | 2141 |
| 80° | 1939 | 1706 | 1730 |
| 85° | 1321 | 1075 | 1075 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3561 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 183.1  | 2.2       |
| 10°-20°   | 515.2  | 6.1       |
| 20°-30°   | 757.2  | 8.9       |
| 30°-40°   | 879.4  | 10.4      |
| 40°-50°   | 878.3  | 10.3      |
| 50°-60°   | 765.8  | 9.0       |
| 60°-70°   | 566.1  | 6.7       |
| 70°-80°   | 320.3  | 3.8       |
| 80°-90°   | 88.1   | 1.0       |
| 90°-100°  | 78.3   | 0.9       |
| 100°-110° | 248.7  | 2.9       |
| 110°-120° | 425.6  | 5.0       |
| 120°-130° | 559.8  | 6.6       |
| 130°-140° | 628.3  | 7.4       |
| 140°-150° | 616.2  | 7.3       |
| 150°-160° | 516.9  | 6.1       |
| 160°-170° | 342.8  | 4.0       |
| 170°-180° | 119.8  | 1.4       |
| 0°-30°    | 1455.5 | 17.1      |
| 0°-40°    | 2334.9 | 27.5      |
| 0°-60°    | 3979.0 | 46.9      |
| 0°-90°    | 4953.6 | 58.3      |
| 90°-120°  | 752.7  | 8.9       |
| 90°-150°  | 2556.9 | 30.1      |
| 90°-180°  | 3536.0 | 41.6      |
| 0°-180°   | 8490.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1946 | 1946  | 1946 | 1946  | 1946 |      |
| 5°   | 1946 | 1938  | 1918 | 1932  | 1929 | 185  |
| 15°  | 1852 | 1841  | 1816 | 1824  | 1815 | 522  |
| 25°  | 1676 | 1661  | 1630 | 1633  | 1630 | 771  |
| 35°  | 1446 | 1428  | 1398 | 1386  | 1377 | 903  |
| 45°  | 1177 | 1164  | 1136 | 1115  | 1108 | 908  |
| 55°  | 891  | 879   | 857  | 834   | 825  | 796  |
| 65°  | 601  | 589   | 571  | 554   | 544  | 594  |
| 75°  | 314  | 311   | 301  | 290   | 294  | 335  |
| 85°  | 77   | 75    | 73   | 67    | 66   | 85   |
| 90°  | 1    | 14    | 37   | 35    | 36   | 8    |
| 95°  | 56   | 66    | 68   | 68    | 66   | 62   |
| 105° | 230  | 233   | 235  | 237   | 237  | 242  |
| 115° | 427  | 433   | 431  | 430   | 427  | 422  |
| 125° | 621  | 631   | 628  | 624   | 623  | 555  |
| 135° | 804  | 815   | 818  | 816   | 814  | 621  |
| 145° | 976  | 983   | 989  | 990   | 986  | 610  |
| 155° | 1116 | 1119  | 1122 | 1127  | 1124 | 513  |
| 165° | 1214 | 1212  | 1212 | 1220  | 1215 | 342  |
| 175° | 1263 | 1260  | 1257 | 1265  | 1259 | 120  |
| 180° | 1265 | 1265  | 1265 | 1265  | 1265 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1945.5 | 1945.5 | 1945.5 | 1945.5 | 1945.5 |
| 2.5°   | 1956.8 | 1947.5 | 1926.9 | 1945.5 | 1942.0 |
| 5°     | 1945.5 | 1938.2 | 1917.5 | 1932.4 | 1928.9 |
| 7.5°   | 1932.4 | 1921.3 | 1900.7 | 1915.8 | 1912.0 |
| 10°    | 1912.0 | 1898.9 | 1876.5 | 1891.3 | 1885.8 |
| 12.5°  | 1883.8 | 1872.7 | 1850.3 | 1859.6 | 1855.8 |
| 15°    | 1852.0 | 1840.9 | 1816.5 | 1824.1 | 1814.7 |
| 17.5°  | 1812.7 | 1801.6 | 1777.2 | 1786.5 | 1777.2 |
| 20°    | 1769.7 | 1758.6 | 1732.4 | 1737.9 | 1730.6 |
| 22.5°  | 1726.8 | 1709.9 | 1685.5 | 1685.5 | 1681.7 |
| 25°    | 1676.2 | 1661.3 | 1629.5 | 1633.1 | 1629.5 |
| 27.5°  | 1620.0 | 1606.9 | 1582.7 | 1577.1 | 1567.8 |
| 30°    | 1564.0 | 1549.0 | 1521.0 | 1515.4 | 1507.9 |
| 32.5°  | 1504.1 | 1493.0 | 1463.0 | 1451.7 | 1444.2 |
| 35°    | 1446.1 | 1427.5 | 1397.5 | 1386.2 | 1376.9 |
| 37.5°  | 1380.6 | 1363.8 | 1333.8 | 1320.7 | 1311.4 |
| 40°    | 1313.4 | 1298.3 | 1268.3 | 1251.6 | 1244.1 |
| 42.5°  | 1247.9 | 1232.8 | 1203.0 | 1184.1 | 1173.0 |
| 45°    | 1176.8 | 1163.7 | 1135.5 | 1115.1 | 1107.5 |
| 47.5°  | 1107.5 | 1094.4 | 1064.5 | 1043.8 | 1032.7 |
| 50°    | 1034.5 | 1025.2 | 999.0  | 972.8  | 963.4  |
| 52.5°  | 963.4  | 950.3  | 926.1  | 905.5  | 892.4  |
| 55°    | 890.6  | 879.3  | 856.8  | 834.4  | 825.1  |
| 57.5°  | 817.5  | 808.2  | 783.8  | 761.4  | 753.8  |
| 60°    | 744.5  | 737.2  | 711.0  | 690.3  | 684.8  |
| 62.5°  | 673.5  | 660.4  | 641.7  | 623.0  | 615.5  |
| 65°    | 600.6  | 589.3  | 570.6  | 553.8  | 544.4  |
| 67.5°  | 525.8  | 516.3  | 499.6  | 486.5  | 478.9  |
| 70°    | 456.5  | 449.0  | 432.1  | 419.0  | 411.7  |
| 72.5°  | 385.5  | 377.9  | 368.6  | 355.5  | 349.9  |
| 75°    | 314.2  | 310.6  | 301.1  | 290.0  | 293.8  |
| 77.5°  | 250.7  | 243.1  | 239.4  | 233.8  | 228.3  |
| 80°    | 187.2  | 185.2  | 181.4  | 175.9  | 172.1  |
| 82.5°  | 127.2  | 127.2  | 125.4  | 117.9  | 117.9  |
| 85°    | 76.6   | 74.8   | 73.0   | 67.3   | 65.5   |
| 87.5°  | 33.7   | 30.0   | 26.2   | 20.6   | 18.7   |
| 90°    | 1.1    | 13.7   | 37.4   | 35.1   | 36.2   |
| 92.5°  | 23.6   | 32.0   | 33.2   | 34.3   | 34.3   |
| 95°    | 55.7   | 66.4   | 68.3   | 68.3   | 66.4   |
| 97.5°  | 92.7   | 102.6  | 106.8  | 106.8  | 106.8  |
| 100°   | 135.4  | 144.2  | 147.2  | 147.2  | 146.1  |
| 102.5° | 180.4  | 186.9  | 191.1  | 192.2  | 191.1  |
| 105°   | 229.6  | 232.6  | 234.9  | 236.8  | 236.8  |
| 107.5° | 278.4  | 283.0  | 283.0  | 283.7  | 278.4  |
| 110°   | 325.7  | 331.8  | 331.8  | 331.8  | 328.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 376.8  | 383.3  | 382.1  | 379.1  | 376.8  |
| 115°   | 427.1  | 433.3  | 431.3  | 430.2  | 427.1  |
| 117.5° | 477.1  | 485.5  | 480.2  | 477.1  | 474.1  |
| 120°   | 527.5  | 535.8  | 527.5  | 527.5  | 524.0  |
| 122.5° | 573.2  | 583.9  | 578.6  | 575.5  | 573.2  |
| 125°   | 621.3  | 630.8  | 627.8  | 624.3  | 623.2  |
| 127.5° | 668.2  | 680.0  | 675.8  | 671.2  | 668.2  |
| 130°   | 712.0  | 725.8  | 723.9  | 721.6  | 717.4  |
| 132.5° | 761.2  | 771.9  | 772.7  | 767.3  | 764.3  |
| 135°   | 803.6  | 815.4  | 817.7  | 816.5  | 813.5  |
| 137.5° | 850.9  | 860.4  | 862.3  | 861.5  | 857.0  |
| 140°   | 892.4  | 902.0  | 907.3  | 907.3  | 903.1  |
| 142.5° | 935.2  | 944.7  | 947.7  | 948.9  | 944.7  |
| 145°   | 975.6  | 983.2  | 989.3  | 990.5  | 986.3  |
| 147.5° | 1011.8 | 1021.3 | 1025.9 | 1027.8 | 1023.6 |
| 150°   | 1049.2 | 1055.7 | 1059.9 | 1063.3 | 1059.9 |
| 152.5° | 1082.4 | 1088.8 | 1094.2 | 1098.4 | 1094.2 |
| 155°   | 1115.5 | 1118.6 | 1122.0 | 1127.4 | 1123.9 |
| 157.5° | 1144.2 | 1146.4 | 1148.3 | 1156.0 | 1150.6 |
| 160°   | 1169.7 | 1172.0 | 1173.1 | 1179.6 | 1175.0 |
| 162.5° | 1193.3 | 1193.3 | 1194.5 | 1201.7 | 1196.4 |
| 165°   | 1213.6 | 1212.4 | 1212.4 | 1220.0 | 1214.7 |
| 167.5° | 1231.9 | 1228.4 | 1228.4 | 1236.1 | 1230.7 |
| 170°   | 1245.6 | 1242.5 | 1241.4 | 1249.0 | 1242.5 |
| 172.5° | 1255.1 | 1252.1 | 1250.9 | 1258.6 | 1252.1 |
| 175°   | 1262.8 | 1259.7 | 1257.4 | 1265.0 | 1258.6 |
| 177.5° | 1267.0 | 1263.9 | 1261.6 | 1268.1 | 1261.6 |
| 180°   | 1265.0 | 1265.0 | 1265.0 | 1265.0 | 1265.0 |

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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 | 12.98            | 13.92 | 13.86 | 14.82 | 15.97 | 12.56          | 13.50 | 13.44 | 14.40 | 15.55 |
|                 | 3H   | 14.62            | 15.47 | 15.52 | 16.38 | 17.55 | 14.16          | 15.01 | 15.05 | 15.92 | 17.09 |
|                 | 4H   | 15.20            | 16.00 | 16.11 | 16.91 | 18.10 | 14.74          | 15.54 | 15.65 | 16.45 | 17.64 |
|                 | 6H   | 15.58            | 16.32 | 16.50 | 17.24 | 18.44 | 15.12          | 15.86 | 16.04 | 16.78 | 17.98 |
|                 | 8H   | 15.68            | 16.38 | 16.61 | 17.32 | 18.52 | 15.22          | 15.92 | 16.15 | 16.87 | 18.06 |
|                 | 12H  | 15.72            | 16.39 | 16.66 | 17.33 | 18.55 | 15.26          | 15.93 | 16.19 | 16.86 | 18.08 |
| 4H              | 2H   | 13.44            | 14.24 | 14.35 | 15.16 | 16.34 | 13.10          | 13.90 | 14.02 | 14.82 | 16.00 |
|                 | 3H   | 15.29            | 15.95 | 16.21 | 16.90 | 18.10 | 14.90          | 15.57 | 15.83 | 16.52 | 17.71 |
|                 | 4H   | 15.99            | 16.59 | 16.92 | 17.54 | 18.76 | 15.59          | 16.20 | 16.53 | 17.14 | 18.36 |
|                 | 6H   | 16.48            | 17.01 | 17.43 | 17.98 | 19.20 | 16.09          | 16.61 | 17.04 | 17.58 | 18.80 |
|                 | 8H   | 16.62            | 17.11 | 17.57 | 18.07 | 19.31 | 16.23          | 16.72 | 17.18 | 17.68 | 18.91 |
|                 | 12H  | 16.69            | 17.13 | 17.66 | 18.11 | 19.35 | 16.28          | 16.73 | 17.25 | 17.70 | 18.95 |
| 8H              | 4H   | 16.18            | 16.67 | 17.13 | 17.63 | 18.87 | 15.83          | 16.32 | 16.78 | 17.28 | 18.51 |
|                 | 6H   | 16.78            | 17.19 | 17.76 | 18.19 | 19.43 | 16.43          | 16.84 | 17.41 | 17.84 | 19.08 |
|                 | 8H   | 16.99            | 17.35 | 17.98 | 18.34 | 19.59 | 16.63          | 16.99 | 17.62 | 17.99 | 19.24 |
|                 | 12H  | 17.11            | 17.43 | 18.10 | 18.41 | 19.71 | 16.74          | 17.06 | 17.73 | 18.04 | 19.34 |
| 12H             | 4H   | 16.16            | 16.61 | 17.14 | 17.59 | 18.83 | 15.82          | 16.26 | 16.79 | 17.24 | 18.48 |
|                 | 6H   | 16.81            | 17.17 | 17.80 | 18.16 | 19.41 | 16.47          | 16.83 | 17.46 | 17.82 | 19.07 |
|                 | 8H   | 17.04            | 17.36 | 18.03 | 18.34 | 19.64 | 16.69          | 17.01 | 17.68 | 17.99 | 19.29 |