

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: P904490

Luminaire Tested: DFN2DIP-TR3F0-080D030US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904490  
REPORT IS A COMBINATION OF REPORTS P900281 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D030US830-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

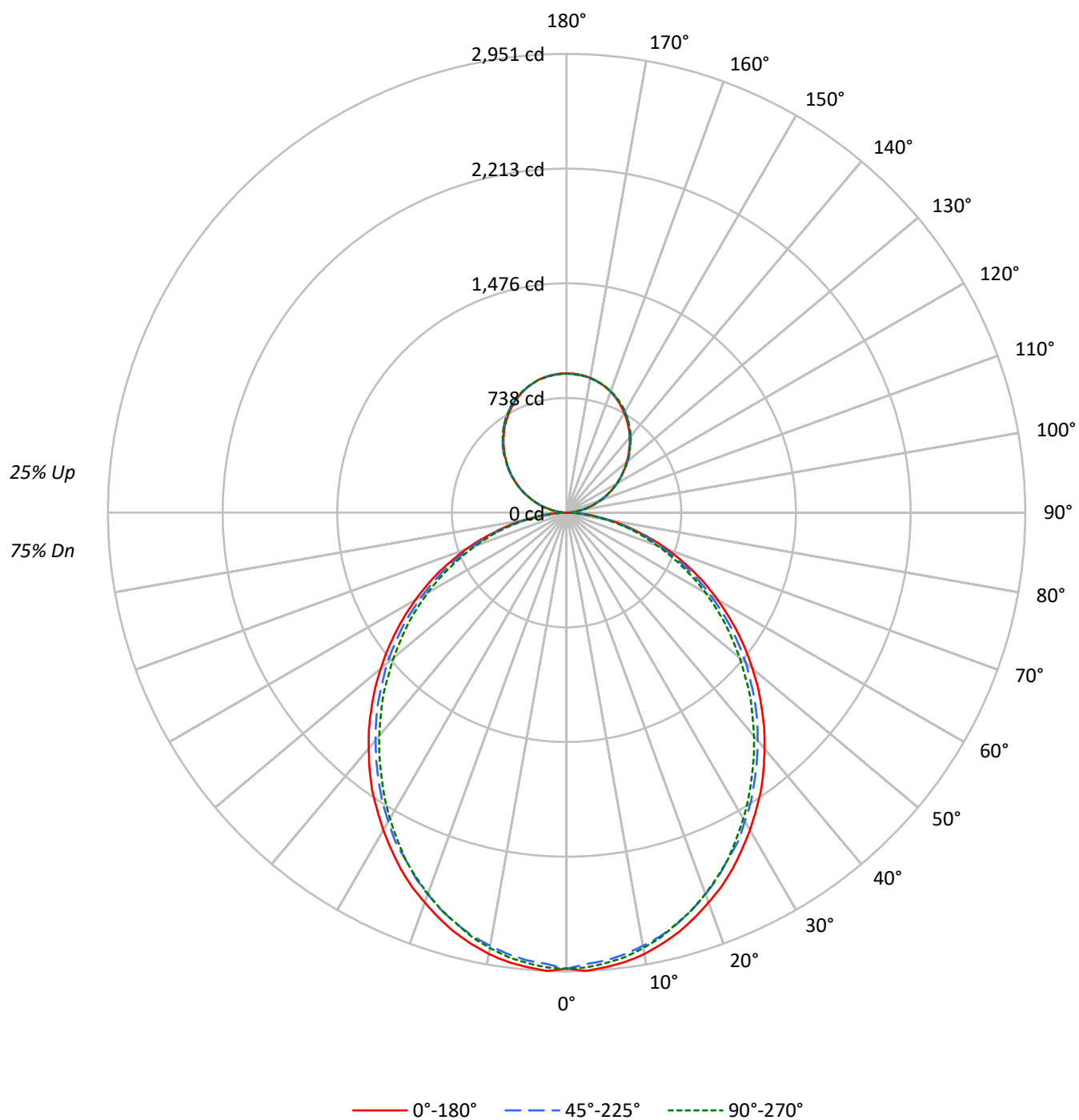
Lumens per Lamp: N/A  
Luminaire Lumens: 9967.4 lumens  
Efficiency: N/A  
Efficacy: 96.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 103.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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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CATALOG NUMBER: DFN2DIP-TR3F0-080D030US830-FLFLL

**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   | 113 | 113 | 113 | 113 | 108 | 108 | 108 | 108 | 97 | 97 | 97 | 88 | 88 | 88 | 79 | 79 | 79 |
| 1   | 103 | 99  | 95  | 91  | 98  | 94  | 91  | 87  | 85 | 83 | 80 | 77 | 75 | 73 | 70 | 68 | 67 |
| 2   | 94  | 86  | 80  | 75  | 89  | 82  | 77  | 72  | 75 | 70 | 66 | 68 | 64 | 61 | 62 | 59 | 56 |
| 3   | 86  | 76  | 68  | 62  | 81  | 73  | 66  | 60  | 66 | 61 | 56 | 60 | 56 | 52 | 55 | 51 | 48 |
| 4   | 79  | 67  | 59  | 53  | 75  | 64  | 57  | 51  | 59 | 53 | 48 | 54 | 49 | 45 | 49 | 45 | 41 |
| 5   | 72  | 60  | 52  | 45  | 69  | 58  | 50  | 44  | 53 | 46 | 41 | 48 | 43 | 39 | 44 | 40 | 36 |
| 6   | 67  | 54  | 46  | 40  | 63  | 52  | 44  | 39  | 48 | 41 | 36 | 44 | 38 | 34 | 40 | 35 | 32 |
| 7   | 62  | 49  | 41  | 35  | 59  | 47  | 39  | 34  | 43 | 37 | 32 | 40 | 34 | 30 | 37 | 32 | 28 |
| 8   | 58  | 45  | 37  | 31  | 55  | 43  | 36  | 30  | 40 | 33 | 29 | 37 | 31 | 27 | 34 | 29 | 25 |
| 9   | 54  | 41  | 33  | 28  | 51  | 39  | 32  | 27  | 36 | 30 | 26 | 34 | 28 | 24 | 31 | 26 | 23 |
| 10  | 50  | 38  | 30  | 25  | 48  | 36  | 29  | 25  | 34 | 28 | 23 | 31 | 26 | 22 | 29 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3656 | 3656 | 3656 |
| 5°  | 3660 | 3602 | 3627 |
| 10° | 3628 | 3550 | 3575 |
| 15° | 3573 | 3489 | 3496 |
| 20° | 3499 | 3405 | 3415 |
| 25° | 3425 | 3305 | 3322 |
| 30° | 3333 | 3211 | 3204 |
| 35° | 3246 | 3101 | 3080 |
| 40° | 3139 | 2990 | 2961 |
| 45° | 3031 | 2879 | 2840 |
| 50° | 2914 | 2762 | 2699 |
| 55° | 2791 | 2626 | 2569 |
| 60° | 2653 | 2466 | 2420 |
| 65° | 2501 | 2299 | 2245 |
| 70° | 2307 | 2097 | 2055 |
| 75° | 2040 | 1853 | 1877 |
| 80° | 1717 | 1542 | 1542 |
| 85° | 1214 | 1016 | 996  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3031 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 276.1  | 2.8       |
| 10°-20°   | 777.0  | 7.8       |
| 20°-30°   | 1141.8 | 11.5      |
| 30°-40°   | 1326.2 | 13.3      |
| 40°-50°   | 1324.5 | 13.3      |
| 50°-60°   | 1155.0 | 11.6      |
| 60°-70°   | 853.8  | 8.6       |
| 70°-80°   | 483.0  | 4.8       |
| 80°-90°   | 130.0  | 1.3       |
| 90°-100°  | 55.3   | 0.6       |
| 100°-110° | 175.8  | 1.8       |
| 110°-120° | 300.9  | 3.0       |
| 120°-130° | 395.7  | 4.0       |
| 130°-140° | 444.2  | 4.5       |
| 140°-150° | 435.6  | 4.4       |
| 150°-160° | 365.4  | 3.7       |
| 160°-170° | 242.3  | 2.4       |
| 170°-180° | 84.7   | 0.8       |
| 0°-30°    | 2195.0 | 22.0      |
| 0°-40°    | 3521.1 | 35.3      |
| 0°-60°    | 6000.6 | 60.2      |
| 0°-90°    | 7467.5 | 74.9      |
| 90°-120°  | 532.1  | 5.3       |
| 90°-150°  | 1807.5 | 18.1      |
| 90°-180°  | 2500.0 | 25.1      |
| 0°-180°   | 9967.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2934 | 2934  | 2934 | 2934  | 2934 |      |
| 5°   | 2934 | 2923  | 2892 | 2914  | 2909 | 279  |
| 15°  | 2793 | 2776  | 2739 | 2751  | 2737 | 787  |
| 25°  | 2528 | 2505  | 2458 | 2463  | 2458 | 1163 |
| 35°  | 2181 | 2153  | 2108 | 2090  | 2076 | 1362 |
| 45°  | 1775 | 1755  | 1712 | 1682  | 1670 | 1370 |
| 55°  | 1343 | 1326  | 1292 | 1258  | 1244 | 1201 |
| 65°  | 906  | 889   | 860  | 835   | 821  | 896  |
| 75°  | 474  | 468   | 454  | 437   | 443  | 506  |
| 85°  | 116  | 113   | 110  | 102   | 99   | 129  |
| 90°  | 1    | 10    | 26   | 25    | 26   | 9    |
| 95°  | 39   | 47    | 48   | 48    | 47   | 44   |
| 105° | 162  | 164   | 166  | 167   | 167  | 171  |
| 115° | 302  | 306   | 305  | 304   | 302  | 299  |
| 125° | 439  | 446   | 444  | 441   | 440  | 392  |
| 135° | 568  | 576   | 578  | 577   | 575  | 439  |
| 145° | 690  | 695   | 699  | 700   | 697  | 431  |
| 155° | 789  | 791   | 793  | 797   | 795  | 363  |
| 165° | 858  | 857   | 857  | 862   | 859  | 242  |
| 175° | 893  | 890   | 889  | 894   | 890  | 85   |
| 180° | 894  | 894   | 894  | 894   | 894  |      |

TEST NUMBER: P904490

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2933.9 | 2933.9 | 2933.9 | 2933.9 | 2933.9 |
| 2.5°   | 2951.0 | 2937.0 | 2905.9 | 2933.9 | 2928.6 |
| 5°     | 2933.9 | 2922.9 | 2891.8 | 2914.2 | 2908.9 |
| 7.5°   | 2914.2 | 2897.5 | 2866.4 | 2889.1 | 2883.4 |
| 10°    | 2883.4 | 2863.6 | 2829.8 | 2852.2 | 2843.9 |
| 12.5°  | 2840.9 | 2824.1 | 2790.3 | 2804.3 | 2798.7 |
| 15°    | 2793.0 | 2776.3 | 2739.4 | 2750.8 | 2736.8 |
| 17.5°  | 2733.7 | 2717.0 | 2680.1 | 2694.3 | 2680.1 |
| 20°    | 2668.8 | 2652.0 | 2612.5 | 2620.9 | 2609.8 |
| 22.5°  | 2604.2 | 2578.7 | 2541.8 | 2541.8 | 2536.2 |
| 25°    | 2527.8 | 2505.4 | 2457.5 | 2462.9 | 2457.5 |
| 27.5°  | 2443.1 | 2423.4 | 2386.8 | 2378.4 | 2364.4 |
| 30°    | 2358.7 | 2335.9 | 2293.8 | 2285.4 | 2274.0 |
| 32.5°  | 2268.3 | 2251.5 | 2206.3 | 2189.2 | 2177.9 |
| 35°    | 2180.9 | 2152.8 | 2107.5 | 2090.5 | 2076.4 |
| 37.5°  | 2082.1 | 2056.6 | 2011.5 | 1991.7 | 1977.6 |
| 40°    | 1980.7 | 1957.8 | 1912.7 | 1887.5 | 1876.1 |
| 42.5°  | 1881.9 | 1859.1 | 1814.2 | 1785.7 | 1769.1 |
| 45°    | 1774.7 | 1754.9 | 1712.4 | 1681.6 | 1670.3 |
| 47.5°  | 1670.3 | 1650.5 | 1605.2 | 1574.1 | 1557.4 |
| 50°    | 1560.1 | 1546.1 | 1506.5 | 1467.0 | 1452.9 |
| 52.5°  | 1452.9 | 1433.1 | 1396.7 | 1365.6 | 1345.8 |
| 55°    | 1343.0 | 1326.0 | 1292.2 | 1258.4 | 1244.3 |
| 57.5°  | 1232.9 | 1218.9 | 1182.0 | 1148.2 | 1136.8 |
| 60°    | 1122.8 | 1111.7 | 1072.1 | 1041.0 | 1032.6 |
| 62.5°  | 1015.6 | 995.9  | 967.7  | 939.6  | 928.2  |
| 65°    | 905.8  | 888.7  | 860.5  | 835.1  | 821.0  |
| 67.5°  | 792.9  | 778.5  | 753.4  | 733.7  | 722.3  |
| 70°    | 688.4  | 677.0  | 651.7  | 631.9  | 620.8  |
| 72.5°  | 581.3  | 570.0  | 555.8  | 536.1  | 527.7  |
| 75°    | 473.8  | 468.4  | 454.1  | 437.3  | 443.0  |
| 77.5°  | 378.1  | 366.6  | 361.0  | 352.6  | 344.2  |
| 80°    | 282.3  | 279.3  | 273.6  | 265.2  | 259.5  |
| 82.5°  | 191.9  | 191.9  | 189.2  | 177.8  | 177.8  |
| 85°    | 115.6  | 112.8  | 110.2  | 101.5  | 98.8   |
| 87.5°  | 50.9   | 45.2   | 39.5   | 31.1   | 28.2   |
| 90°    | 0.8    | 9.7    | 26.4   | 24.8   | 25.6   |
| 92.5°  | 16.7   | 22.6   | 23.5   | 24.2   | 24.2   |
| 95°    | 39.4   | 46.9   | 48.3   | 48.3   | 46.9   |
| 97.5°  | 65.5   | 72.5   | 75.5   | 75.5   | 75.5   |
| 100°   | 95.7   | 101.9  | 104.1  | 104.1  | 103.3  |
| 102.5° | 127.5  | 132.1  | 135.1  | 135.9  | 135.1  |
| 105°   | 162.3  | 164.5  | 166.1  | 167.4  | 167.4  |
| 107.5° | 196.8  | 200.0  | 200.0  | 200.6  | 196.8  |
| 110°   | 230.3  | 234.6  | 234.6  | 234.6  | 232.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 266.4 | 271.0 | 270.1 | 268.0 | 266.4 |
| 115°   | 302.0 | 306.2 | 304.9 | 304.2 | 302.0 |
| 117.5° | 337.2 | 343.2 | 339.4 | 337.2 | 335.1 |
| 120°   | 372.9 | 378.8 | 372.9 | 372.9 | 370.4 |
| 122.5° | 405.2 | 412.7 | 409.0 | 406.8 | 405.2 |
| 125°   | 439.2 | 445.9 | 443.7 | 441.3 | 440.5 |
| 127.5° | 472.3 | 480.7 | 477.8 | 474.5 | 472.3 |
| 130°   | 503.3 | 513.0 | 511.7 | 510.1 | 507.1 |
| 132.5° | 538.1 | 545.6 | 546.2 | 542.4 | 540.3 |
| 135°   | 568.1 | 576.4 | 578.1 | 577.2 | 575.0 |
| 137.5° | 601.4 | 608.2 | 609.5 | 609.1 | 605.8 |
| 140°   | 630.8 | 637.6 | 641.4 | 641.4 | 638.4 |
| 142.5° | 661.1 | 667.8 | 670.0 | 670.8 | 667.8 |
| 145°   | 689.7 | 695.0 | 699.4 | 700.1 | 697.2 |
| 147.5° | 715.3 | 722.0 | 725.2 | 726.6 | 723.6 |
| 150°   | 741.7 | 746.3 | 749.2 | 751.7 | 749.2 |
| 152.5° | 765.2 | 769.7 | 773.5 | 776.5 | 773.5 |
| 155°   | 788.6 | 790.7 | 793.1 | 796.9 | 794.6 |
| 157.5° | 808.8 | 810.4 | 811.8 | 817.2 | 813.4 |
| 160°   | 826.9 | 828.5 | 829.3 | 833.9 | 830.7 |
| 162.5° | 843.6 | 843.6 | 844.4 | 849.5 | 845.7 |
| 165°   | 857.9 | 857.1 | 857.1 | 862.4 | 858.7 |
| 167.5° | 870.8 | 868.4 | 868.4 | 873.7 | 870.0 |
| 170°   | 880.5 | 878.4 | 877.6 | 883.0 | 878.4 |
| 172.5° | 887.2 | 885.1 | 884.3 | 889.7 | 885.1 |
| 175°   | 892.7 | 890.5 | 888.9 | 894.3 | 889.7 |
| 177.5° | 895.6 | 893.4 | 891.8 | 896.5 | 891.8 |
| 180°   | 894.3 | 894.3 | 894.3 | 894.3 | 894.3 |

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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 | 13.76            | 14.90 | 14.47 | 15.63 | 16.50 | 13.34          | 14.48 | 14.04 | 15.21 | 16.07 |
|                 | 3H   | 15.43            | 16.46 | 16.16 | 17.20 | 18.10 | 14.97          | 15.99 | 15.69 | 16.73 | 17.63 |
|                 | 4H   | 16.03            | 17.00 | 16.77 | 17.75 | 18.65 | 15.56          | 16.53 | 16.30 | 17.28 | 18.19 |
|                 | 6H   | 16.44            | 17.33 | 17.19 | 18.09 | 19.01 | 15.97          | 16.86 | 16.72 | 17.62 | 18.54 |
|                 | 8H   | 16.54            | 17.40 | 17.31 | 18.17 | 19.10 | 16.08          | 16.93 | 16.84 | 17.71 | 18.63 |
|                 | 12H  | 16.60            | 17.41 | 17.37 | 18.18 | 19.14 | 16.12          | 16.94 | 16.90 | 17.71 | 18.66 |
| 4H              | 2H   | 14.25            | 15.22 | 15.00 | 15.97 | 16.88 | 13.91          | 14.88 | 14.66 | 15.63 | 16.54 |
|                 | 3H   | 16.13            | 16.94 | 16.89 | 17.73 | 18.65 | 15.75          | 16.55 | 16.50 | 17.34 | 18.26 |
|                 | 4H   | 16.85            | 17.59 | 17.63 | 18.37 | 19.33 | 16.45          | 17.19 | 17.22 | 17.97 | 18.93 |
|                 | 6H   | 17.37            | 18.01 | 18.17 | 18.82 | 19.78 | 16.97          | 17.61 | 17.76 | 18.42 | 19.38 |
|                 | 8H   | 17.53            | 18.12 | 18.32 | 18.93 | 19.90 | 17.12          | 17.72 | 17.91 | 18.52 | 19.50 |
|                 | 12H  | 17.61            | 18.14 | 18.42 | 18.97 | 19.95 | 17.19          | 17.73 | 18.01 | 18.56 | 19.54 |
| 8H              | 4H   | 17.07            | 17.66 | 17.86 | 18.47 | 19.44 | 16.71          | 17.31 | 17.51 | 18.11 | 19.09 |
|                 | 6H   | 17.70            | 18.19 | 18.52 | 19.04 | 20.02 | 17.34          | 17.84 | 18.16 | 18.68 | 19.66 |
|                 | 8H   | 17.92            | 18.36 | 18.75 | 19.20 | 20.19 | 17.55          | 17.99 | 18.39 | 18.84 | 19.83 |
|                 | 12H  | 18.06            | 18.44 | 18.89 | 19.28 | 20.33 | 17.68          | 18.06 | 18.51 | 18.90 | 19.95 |
| 12H             | 4H   | 17.07            | 17.60 | 17.88 | 18.43 | 19.41 | 16.72          | 17.25 | 17.53 | 18.08 | 19.06 |
|                 | 6H   | 17.73            | 18.17 | 18.56 | 19.02 | 20.01 | 17.38          | 17.82 | 18.22 | 18.67 | 19.66 |
|                 | 8H   | 17.98            | 18.37 | 18.82 | 19.20 | 20.25 | 17.63          | 18.01 | 18.46 | 18.85 | 19.90 |