

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: P914352

Luminaire Tested: DFN2DIP-PN4F0-120D060US927-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P914352
REPORT IS A COMBINATION OF REPORTS P899661 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-120D060US927-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

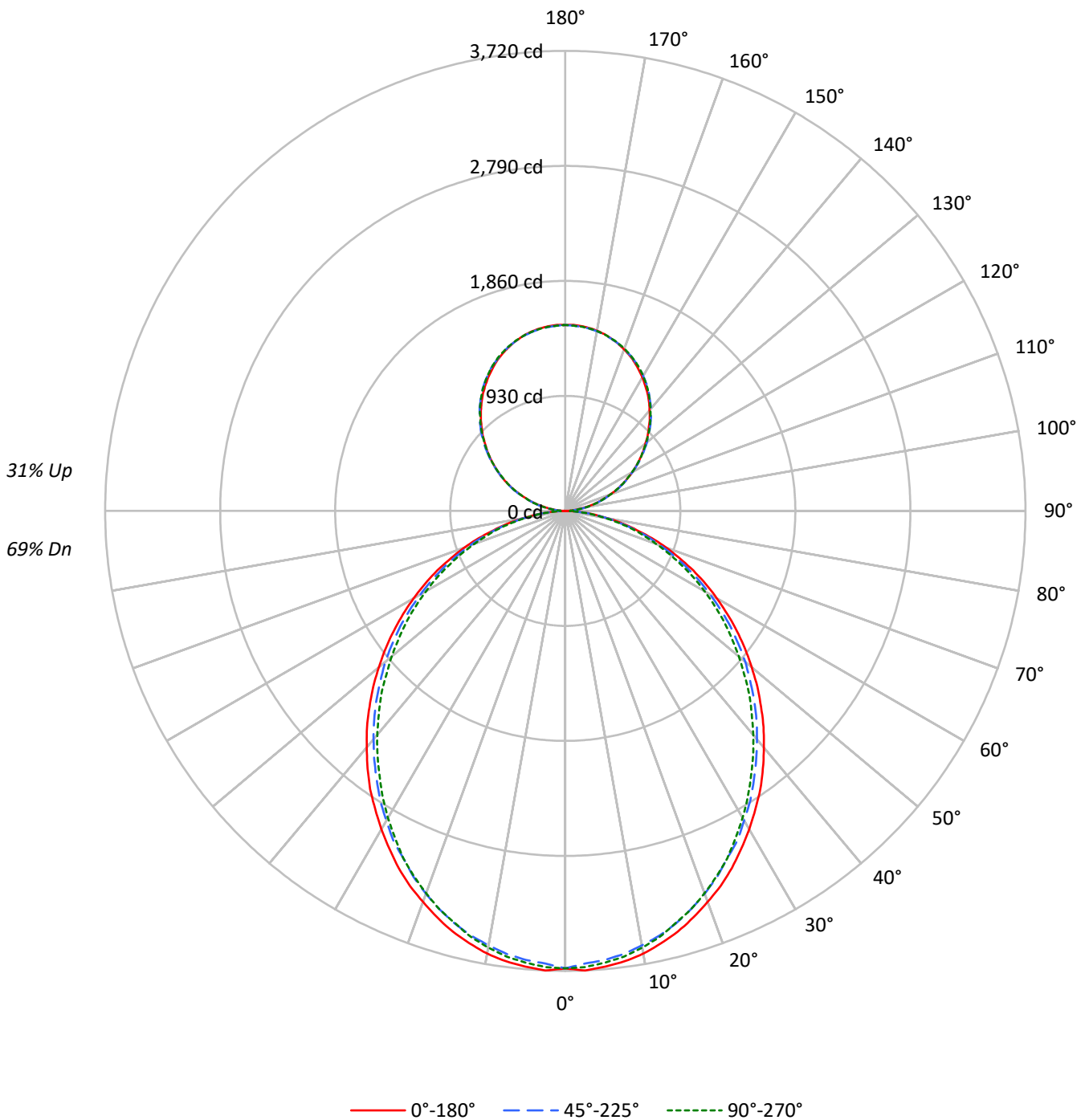
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13617.6 lumens
Efficiency: N/A
Efficacy: 79.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 171.4
Input Voltage (V):
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.9781
Total Harmonic Distortion (THDi): 0.075
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: P914352
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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | | | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | | | 0 | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 83 | 83 | 83 | 74 | 74 | 74 | 69 | | | |
| 1 | 102 | 98 | 94 | 90 | 96 | 92 | 89 | 86 | 83 | 80 | 77 | 74 | 71 | 70 | 65 | 64 | 62 | 58 | | | |
| 2 | 93 | 85 | 79 | 74 | 88 | 81 | 75 | 70 | 72 | 68 | 64 | 65 | 61 | 58 | 57 | 55 | 52 | 49 | | | |
| 3 | 85 | 75 | 67 | 61 | 80 | 71 | 64 | 59 | 64 | 58 | 54 | 57 | 53 | 49 | 51 | 48 | 45 | 41 | | | |
| 4 | 78 | 67 | 58 | 52 | 73 | 63 | 56 | 50 | 57 | 51 | 46 | 51 | 46 | 42 | 46 | 42 | 39 | 35 | | | |
| 5 | 71 | 59 | 51 | 45 | 67 | 56 | 49 | 43 | 51 | 45 | 40 | 46 | 41 | 37 | 41 | 37 | 34 | 31 | | | |
| 6 | 66 | 53 | 45 | 39 | 62 | 51 | 43 | 38 | 46 | 40 | 35 | 41 | 36 | 32 | 37 | 33 | 30 | 27 | | | |
| 7 | 61 | 48 | 40 | 34 | 58 | 46 | 39 | 33 | 42 | 35 | 31 | 38 | 33 | 29 | 34 | 30 | 26 | 24 | | | |
| 8 | 57 | 44 | 36 | 31 | 54 | 42 | 35 | 30 | 38 | 32 | 28 | 35 | 29 | 26 | 31 | 27 | 24 | 22 | | | |
| 9 | 53 | 40 | 33 | 27 | 50 | 39 | 31 | 26 | 35 | 29 | 25 | 32 | 27 | 23 | 29 | 25 | 21 | 19 | | | |
| 10 | 50 | 37 | 30 | 25 | 47 | 36 | 29 | 24 | 32 | 27 | 22 | 30 | 25 | 21 | 27 | 23 | 20 | 18 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2700 | 2700 | 2700 |
| 5° | 2704 | 2663 | 2681 |
| 10° | 2682 | 2627 | 2645 |
| 15° | 2643 | 2584 | 2589 |
| 20° | 2590 | 2525 | 2531 |
| 25° | 2537 | 2453 | 2465 |
| 30° | 2470 | 2387 | 2380 |
| 35° | 2407 | 2308 | 2290 |
| 40° | 2330 | 2229 | 2204 |
| 45° | 2252 | 2149 | 2117 |
| 50° | 2168 | 2066 | 2016 |
| 55° | 2079 | 1970 | 1923 |
| 60° | 1979 | 1855 | 1817 |
| 65° | 1870 | 1737 | 1691 |
| 70° | 1732 | 1592 | 1556 |
| 75° | 1539 | 1419 | 1432 |
| 80° | 1307 | 1199 | 1195 |
| 85° | 946 | 819 | 799 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2252 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 348.1 | 2.6 |
| 10°-20° | 979.5 | 7.2 |
| 20°-30° | 1439.5 | 10.6 |
| 30°-40° | 1671.9 | 12.3 |
| 40°-50° | 1669.9 | 12.3 |
| 50°-60° | 1456.0 | 10.7 |
| 60°-70° | 1076.3 | 7.9 |
| 70°-80° | 609.0 | 4.5 |
| 80°-90° | 165.0 | 1.2 |
| 90°-100° | 93.0 | 0.7 |
| 100°-110° | 295.6 | 2.2 |
| 110°-120° | 505.8 | 3.7 |
| 120°-130° | 665.2 | 4.9 |
| 130°-140° | 746.6 | 5.5 |
| 140°-150° | 732.2 | 5.4 |
| 150°-160° | 614.2 | 4.5 |
| 160°-170° | 407.3 | 3.0 |
| 170°-180° | 142.4 | 1.0 |
| 0°-30° | 2767.2 | 20.3 |
| 0°-40° | 4439.1 | 32.6 |
| 0°-60° | 7565.0 | 55.6 |
| 0°-90° | 9415.4 | 69.1 |
| 90°-120° | 894.4 | 6.6 |
| 90°-150° | 3038.4 | 22.3 |
| 90°-180° | 4202.0 | 30.9 |
| 0°-180° | 13617.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3699 | 3699 | 3699 | 3699 | 3699 | |
| 5° | 3699 | 3685 | 3646 | 3674 | 3667 | 351 |
| 15° | 3521 | 3500 | 3454 | 3468 | 3450 | 992 |
| 25° | 3187 | 3158 | 3098 | 3105 | 3098 | 1466 |
| 35° | 2749 | 2714 | 2657 | 2636 | 2618 | 1717 |
| 45° | 2237 | 2212 | 2159 | 2120 | 2106 | 1727 |
| 55° | 1693 | 1672 | 1629 | 1586 | 1569 | 1514 |
| 65° | 1142 | 1120 | 1085 | 1053 | 1035 | 1129 |
| 75° | 597 | 591 | 572 | 551 | 558 | 638 |
| 85° | 146 | 142 | 139 | 128 | 124 | 162 |
| 90° | 1 | 16 | 44 | 42 | 43 | 13 |
| 95° | 66 | 79 | 81 | 81 | 79 | 74 |
| 105° | 273 | 276 | 279 | 282 | 282 | 288 |
| 115° | 508 | 515 | 512 | 511 | 508 | 502 |
| 125° | 738 | 750 | 746 | 742 | 740 | 660 |
| 135° | 955 | 969 | 972 | 970 | 967 | 738 |
| 145° | 1159 | 1168 | 1176 | 1177 | 1172 | 724 |
| 155° | 1326 | 1329 | 1333 | 1340 | 1336 | 610 |
| 165° | 1442 | 1441 | 1441 | 1450 | 1443 | 407 |
| 175° | 1500 | 1497 | 1494 | 1503 | 1496 | 143 |
| 180° | 1503 | 1503 | 1503 | 1503 | 1503 | |



TEST NUMBER: P914352

CATALOG NUMBER: DFN2DIP-PN4F0-120D060US927-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3698.9 | 3698.9 | 3698.9 | 3698.9 | 3698.9 |
| 2.5° | 3720.4 | 3702.7 | 3663.4 | 3698.9 | 3692.1 |
| 5° | 3698.9 | 3684.9 | 3645.7 | 3674.0 | 3667.2 |
| 7.5° | 3674.0 | 3652.8 | 3613.6 | 3642.3 | 3635.2 |
| 10° | 3635.2 | 3610.2 | 3567.6 | 3595.9 | 3585.3 |
| 12.5° | 3581.5 | 3560.4 | 3517.8 | 3535.5 | 3528.3 |
| 15° | 3521.2 | 3500.0 | 3453.6 | 3467.9 | 3450.2 |
| 17.5° | 3446.5 | 3425.3 | 3378.9 | 3396.6 | 3378.9 |
| 20° | 3364.6 | 3343.4 | 3293.7 | 3304.2 | 3290.2 |
| 22.5° | 3283.0 | 3251.0 | 3204.5 | 3204.5 | 3197.4 |
| 25° | 3186.8 | 3158.5 | 3098.1 | 3105.0 | 3098.1 |
| 27.5° | 3080.0 | 3055.1 | 3009.1 | 2998.5 | 2980.8 |
| 30° | 2973.6 | 2944.9 | 2891.7 | 2881.2 | 2866.8 |
| 32.5° | 2859.6 | 2838.5 | 2781.5 | 2760.0 | 2745.7 |
| 35° | 2749.4 | 2714.0 | 2657.0 | 2635.5 | 2617.8 |
| 37.5° | 2624.9 | 2592.9 | 2535.9 | 2511.0 | 2493.2 |
| 40° | 2497.0 | 2468.4 | 2411.3 | 2379.6 | 2365.3 |
| 42.5° | 2372.5 | 2343.8 | 2287.2 | 2251.4 | 2230.2 |
| 45° | 2237.4 | 2212.5 | 2158.9 | 2120.0 | 2105.7 |
| 47.5° | 2105.7 | 2080.7 | 2023.8 | 1984.6 | 1963.4 |
| 50° | 1966.8 | 1949.1 | 1899.3 | 1849.4 | 1831.7 |
| 52.5° | 1831.7 | 1806.8 | 1760.8 | 1721.5 | 1696.6 |
| 55° | 1693.2 | 1671.7 | 1629.0 | 1586.4 | 1568.7 |
| 57.5° | 1554.3 | 1536.6 | 1490.2 | 1447.6 | 1433.2 |
| 60° | 1415.5 | 1401.5 | 1351.7 | 1312.5 | 1301.9 |
| 62.5° | 1280.4 | 1255.4 | 1220.0 | 1184.5 | 1170.2 |
| 65° | 1141.9 | 1120.4 | 1084.9 | 1052.8 | 1035.1 |
| 67.5° | 999.7 | 981.5 | 949.8 | 925.0 | 910.6 |
| 70° | 867.9 | 853.6 | 821.5 | 796.6 | 782.7 |
| 72.5° | 732.8 | 718.5 | 700.8 | 675.9 | 665.3 |
| 75° | 597.4 | 590.6 | 572.4 | 551.4 | 558.5 |
| 77.5° | 476.6 | 462.2 | 455.1 | 444.5 | 434.0 |
| 80° | 355.8 | 352.0 | 344.9 | 334.4 | 327.2 |
| 82.5° | 241.9 | 241.9 | 238.5 | 224.2 | 224.2 |
| 85° | 145.7 | 142.3 | 138.9 | 127.9 | 124.5 |
| 87.5° | 64.2 | 57.0 | 49.8 | 39.2 | 35.5 |
| 90° | 1.3 | 16.3 | 44.4 | 41.7 | 43.0 |
| 92.5° | 28.1 | 38.1 | 39.5 | 40.8 | 40.8 |
| 95° | 66.1 | 78.8 | 81.1 | 81.1 | 78.8 |
| 97.5° | 110.1 | 121.9 | 126.9 | 126.9 | 126.9 |
| 100° | 160.9 | 171.3 | 174.9 | 174.9 | 173.6 |
| 102.5° | 214.4 | 222.0 | 227.0 | 228.4 | 227.0 |
| 105° | 272.8 | 276.5 | 279.2 | 281.5 | 281.5 |
| 107.5° | 330.8 | 336.3 | 336.3 | 337.2 | 330.8 |
| 110° | 387.1 | 394.3 | 394.3 | 394.3 | 390.6 |



TEST NUMBER: P914352

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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 447.7 | 455.4 | 454.1 | 450.4 | 447.7 |
| 115° | 507.6 | 514.8 | 512.5 | 511.2 | 507.6 |
| 117.5° | 567.0 | 576.9 | 570.5 | 567.0 | 563.3 |
| 120° | 626.8 | 636.8 | 626.8 | 626.8 | 622.7 |
| 122.5° | 681.1 | 693.8 | 687.5 | 683.9 | 681.1 |
| 125° | 738.2 | 749.6 | 745.9 | 741.9 | 740.5 |
| 127.5° | 794.0 | 808.0 | 803.0 | 797.6 | 794.0 |
| 130° | 846.1 | 862.4 | 860.2 | 857.5 | 852.5 |
| 132.5° | 904.6 | 917.3 | 918.1 | 911.8 | 908.2 |
| 135° | 954.9 | 968.9 | 971.6 | 970.3 | 966.6 |
| 137.5° | 1011.1 | 1022.4 | 1024.7 | 1023.7 | 1018.3 |
| 140° | 1060.5 | 1071.8 | 1078.2 | 1078.2 | 1073.2 |
| 142.5° | 1111.2 | 1122.5 | 1126.2 | 1127.5 | 1122.5 |
| 145° | 1159.3 | 1168.3 | 1175.6 | 1176.9 | 1172.0 |
| 147.5° | 1202.3 | 1213.6 | 1219.1 | 1221.3 | 1216.3 |
| 150° | 1246.7 | 1254.4 | 1259.4 | 1263.4 | 1259.4 |
| 152.5° | 1286.1 | 1293.9 | 1300.2 | 1305.2 | 1300.2 |
| 155° | 1325.6 | 1329.2 | 1333.2 | 1339.7 | 1335.5 |
| 157.5° | 1359.5 | 1362.3 | 1364.5 | 1373.6 | 1367.3 |
| 160° | 1390.0 | 1392.7 | 1394.0 | 1401.7 | 1396.3 |
| 162.5° | 1418.0 | 1418.0 | 1419.4 | 1428.0 | 1421.6 |
| 165° | 1442.0 | 1440.7 | 1440.7 | 1449.8 | 1443.4 |
| 167.5° | 1463.8 | 1459.8 | 1459.8 | 1468.8 | 1462.4 |
| 170° | 1480.1 | 1476.5 | 1475.1 | 1484.2 | 1476.5 |
| 172.5° | 1491.4 | 1487.8 | 1486.4 | 1495.5 | 1487.8 |
| 175° | 1500.5 | 1496.9 | 1494.1 | 1503.2 | 1495.5 |
| 177.5° | 1505.5 | 1501.9 | 1499.1 | 1506.8 | 1499.1 |
| 180° | 1503.2 | 1503.2 | 1503.2 | 1503.2 | 1503.2 |



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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 | 12.33 | 13.40 | 13.11 | 14.19 | 15.16 | 11.89 | 12.96 | 12.67 | 13.75 | 14.72 |
| | 3H | 14.01 | 14.97 | 14.80 | 15.77 | 16.77 | 13.53 | 14.48 | 14.31 | 15.29 | 16.29 |
| | 4H | 14.61 | 15.51 | 15.41 | 16.33 | 17.34 | 14.12 | 15.03 | 14.93 | 15.84 | 16.85 |
| | 6H | 15.02 | 15.86 | 15.84 | 16.68 | 17.70 | 14.53 | 15.36 | 15.35 | 16.19 | 17.21 |
| | 8H | 15.13 | 15.93 | 15.96 | 16.77 | 17.79 | 14.64 | 15.44 | 15.47 | 16.28 | 17.30 |
| | 12H | 15.19 | 15.95 | 16.02 | 16.78 | 17.83 | 14.69 | 15.45 | 15.52 | 16.28 | 17.33 |
| 4H | 2H | 12.82 | 13.72 | 13.63 | 14.53 | 15.54 | 12.47 | 13.37 | 13.28 | 14.18 | 15.19 |
| | 3H | 14.71 | 15.46 | 15.53 | 16.31 | 17.33 | 14.30 | 15.06 | 15.12 | 15.90 | 16.93 |
| | 4H | 15.43 | 16.12 | 16.26 | 16.96 | 18.02 | 15.01 | 15.70 | 15.85 | 16.55 | 17.60 |
| | 6H | 15.96 | 16.55 | 16.81 | 17.42 | 18.48 | 15.54 | 16.13 | 16.39 | 17.00 | 18.06 |
| | 8H | 16.12 | 16.67 | 16.97 | 17.54 | 18.61 | 15.69 | 16.24 | 16.54 | 17.11 | 18.18 |
| | 12H | 16.20 | 16.70 | 17.07 | 17.59 | 18.66 | 15.76 | 16.26 | 16.63 | 17.15 | 18.22 |
| 8H | 4H | 15.64 | 16.20 | 16.50 | 17.06 | 18.14 | 15.27 | 15.83 | 16.13 | 16.69 | 17.76 |
| | 6H | 16.29 | 16.75 | 17.17 | 17.65 | 18.72 | 15.91 | 16.37 | 16.79 | 17.28 | 18.35 |
| | 8H | 16.51 | 16.92 | 17.40 | 17.82 | 18.91 | 16.13 | 16.54 | 17.02 | 17.44 | 18.52 |
| | 12H | 16.65 | 17.01 | 17.55 | 17.91 | 19.05 | 16.25 | 16.61 | 17.15 | 17.51 | 18.65 |
| 12H | 4H | 15.64 | 16.14 | 16.51 | 17.02 | 18.10 | 15.28 | 15.78 | 16.15 | 16.66 | 17.74 |
| | 6H | 16.32 | 16.73 | 17.21 | 17.63 | 18.72 | 15.95 | 16.36 | 16.85 | 17.26 | 18.35 |
| | 8H | 16.57 | 16.93 | 17.47 | 17.83 | 18.97 | 16.20 | 16.56 | 17.10 | 17.45 | 18.59 |