

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: P912014

Luminaire Tested: DFN2DIP-SQ3F0-100D040US850-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912014
REPORT IS A COMBINATION OF REPORTS P899874 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-100D040US850-RLLFLL
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

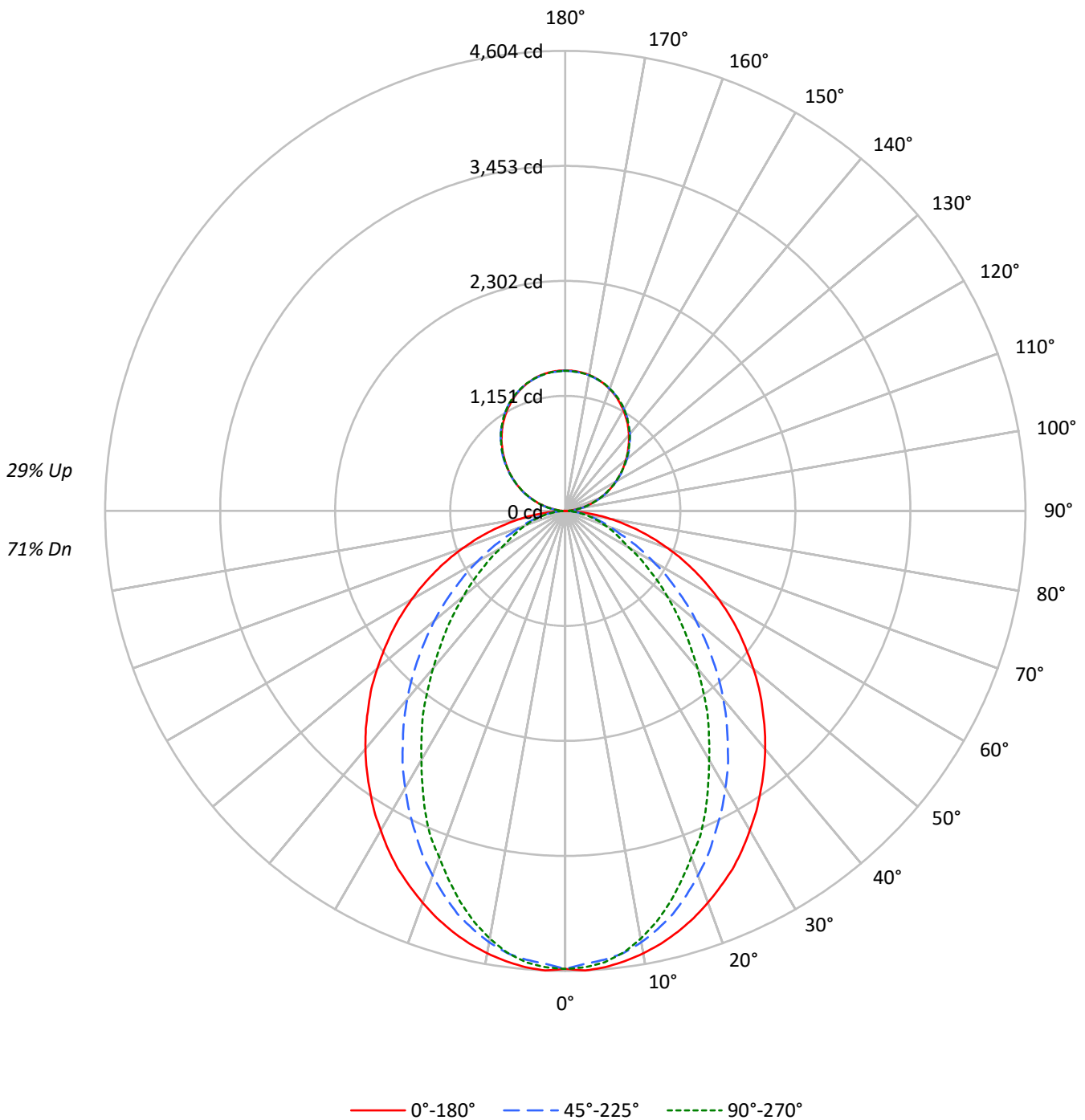
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13352.3 lumens
Efficiency: N/A
Efficacy: 103.7 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): 128.8
Input Voltage (V):
Input Current (Ain): 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: P912014

CATALOG NUMBER: DFN2DIP-SQ3F0-100D040US850-RLFL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF | 20 | | | | 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 | 95 | 95 | 95 | 85 | 85 | 85 | 75 | 75 | 75 | 75 | 75 | 75 | 71 |
| 1 | 103 | 99 | 95 | 92 | 97 | 94 | 90 | 88 | 84 | 82 | 79 | 76 | 74 | 72 | 67 | 66 | 65 | 65 | 65 | 65 | 61 |
| 2 | 94 | 87 | 81 | 76 | 89 | 83 | 78 | 73 | 75 | 71 | 67 | 67 | 64 | 61 | 60 | 58 | 56 | 56 | 56 | 56 | 52 |
| 3 | 87 | 77 | 70 | 64 | 82 | 74 | 67 | 62 | 67 | 61 | 57 | 60 | 56 | 53 | 54 | 51 | 48 | 48 | 48 | 48 | 45 |
| 4 | 80 | 69 | 61 | 55 | 75 | 66 | 59 | 53 | 60 | 54 | 49 | 54 | 49 | 46 | 49 | 45 | 42 | 42 | 42 | 42 | 39 |
| 5 | 74 | 62 | 54 | 48 | 69 | 59 | 52 | 46 | 54 | 48 | 43 | 49 | 44 | 40 | 44 | 40 | 37 | 37 | 37 | 37 | 34 |
| 6 | 68 | 56 | 48 | 42 | 64 | 54 | 46 | 41 | 49 | 43 | 38 | 44 | 39 | 36 | 40 | 36 | 33 | 33 | 33 | 33 | 31 |
| 7 | 63 | 51 | 43 | 37 | 60 | 49 | 41 | 36 | 45 | 38 | 34 | 41 | 36 | 32 | 37 | 33 | 30 | 30 | 30 | 30 | 27 |
| 8 | 59 | 47 | 39 | 33 | 56 | 45 | 37 | 32 | 41 | 35 | 31 | 37 | 32 | 29 | 34 | 30 | 27 | 27 | 27 | 27 | 25 |
| 9 | 55 | 43 | 35 | 30 | 52 | 41 | 34 | 29 | 38 | 32 | 28 | 35 | 30 | 26 | 32 | 28 | 24 | 24 | 24 | 24 | 22 |
| 10 | 52 | 39 | 32 | 27 | 49 | 38 | 31 | 27 | 35 | 29 | 25 | 32 | 27 | 24 | 30 | 25 | 22 | 22 | 22 | 22 | 21 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 5252 | 5252 | 5252 |
| 5° | 5257 | 5165 | 5200 |
| 10° | 5201 | 5060 | 5029 |
| 15° | 5127 | 4889 | 4766 |
| 20° | 5028 | 4656 | 4443 |
| 25° | 4928 | 4394 | 4132 |
| 30° | 4794 | 4127 | 3738 |
| 35° | 4663 | 3839 | 3392 |
| 40° | 4529 | 3542 | 2995 |
| 45° | 4374 | 3213 | 2636 |
| 50° | 4214 | 2881 | 2285 |
| 55° | 4045 | 2526 | 1948 |
| 60° | 3851 | 2156 | 1602 |
| 65° | 3627 | 1780 | 1440 |
| 70° | 3354 | 1430 | 1301 |
| 75° | 3012 | 1253 | 1179 |
| 80° | 2516 | 1041 | 1017 |
| 85° | 1706 | 677 | 754 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4374 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 429.6 | 3.2 |
| 10°-20° | 1179.3 | 8.8 |
| 20°-30° | 1655.6 | 12.4 |
| 30°-40° | 1804.7 | 13.5 |
| 40°-50° | 1658.8 | 12.4 |
| 50°-60° | 1302.7 | 9.8 |
| 60°-70° | 847.9 | 6.4 |
| 70°-80° | 436.5 | 3.3 |
| 80°-90° | 115.4 | 0.9 |
| 90°-100° | 86.8 | 0.7 |
| 100°-110° | 275.8 | 2.1 |
| 110°-120° | 472.0 | 3.5 |
| 120°-130° | 620.8 | 4.6 |
| 130°-140° | 696.8 | 5.2 |
| 140°-150° | 683.3 | 5.1 |
| 150°-160° | 573.2 | 4.3 |
| 160°-170° | 380.1 | 2.8 |
| 170°-180° | 132.9 | 1.0 |
| 0°-30° | 3264.5 | 24.4 |
| 0°-40° | 5069.2 | 38.0 |
| 0°-60° | 8030.6 | 60.1 |
| 0°-90° | 9430.5 | 70.6 |
| 90°-120° | 834.7 | 6.3 |
| 90°-150° | 2835.6 | 21.2 |
| 90°-180° | 3922.0 | 29.4 |
| 0°-180° | 13352.3 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4584 | 4584 | 4584 | 4584 | 4584 | |
| 5° | 4584 | 4563 | 4509 | 4546 | 4534 | 435 |
| 15° | 4360 | 4314 | 4173 | 4094 | 4053 | 1228 |
| 25° | 3957 | 3824 | 3551 | 3381 | 3318 | 1820 |
| 35° | 3410 | 3198 | 2833 | 2572 | 2480 | 2134 |
| 45° | 2788 | 2509 | 2074 | 1779 | 1680 | 2153 |
| 55° | 2119 | 1796 | 1348 | 1099 | 1020 | 1894 |
| 65° | 1431 | 1095 | 722 | 581 | 568 | 1419 |
| 75° | 763 | 473 | 332 | 303 | 299 | 807 |
| 85° | 178 | 91 | 79 | 79 | 79 | 205 |
| 90° | 1 | 15 | 42 | 39 | 40 | 13 |
| 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 | |



TEST NUMBER: P912014

CATALOG NUMBER: DFN2DIP-SQ3F0-100D040US850-RLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4583.5 | 4583.5 | 4583.5 | 4583.5 | 4583.5 |
| 2.5° | 4604.1 | 4583.5 | 4537.7 | 4579.5 | 4571.2 |
| 5° | 4583.5 | 4562.8 | 4508.6 | 4546.1 | 4533.7 |
| 7.5° | 4546.1 | 4521.4 | 4463.3 | 4479.6 | 4459.0 |
| 10° | 4496.3 | 4467.3 | 4384.5 | 4371.8 | 4347.2 |
| 12.5° | 4434.3 | 4396.9 | 4284.6 | 4260.0 | 4214.2 |
| 15° | 4359.5 | 4313.7 | 4172.8 | 4094.1 | 4052.7 |
| 17.5° | 4272.3 | 4205.9 | 4031.7 | 3940.5 | 3874.1 |
| 20° | 4172.8 | 4089.7 | 3882.4 | 3779.0 | 3687.4 |
| 22.5° | 4065.0 | 3969.6 | 3728.8 | 3588.1 | 3526.0 |
| 25° | 3957.2 | 3824.4 | 3550.6 | 3380.7 | 3318.2 |
| 27.5° | 3828.7 | 3687.4 | 3384.7 | 3189.7 | 3094.2 |
| 30° | 3691.9 | 3533.8 | 3202.0 | 2990.9 | 2878.6 |
| 32.5° | 3559.0 | 3367.9 | 3028.2 | 2779.2 | 2675.2 |
| 35° | 3409.7 | 3198.1 | 2833.3 | 2571.9 | 2480.3 |
| 37.5° | 3264.6 | 3036.1 | 2650.6 | 2364.2 | 2260.7 |
| 40° | 3111.0 | 2862.3 | 2459.7 | 2165.2 | 2057.4 |
| 42.5° | 2953.4 | 2688.0 | 2269.1 | 1961.9 | 1858.5 |
| 45° | 2787.5 | 2509.3 | 2074.2 | 1779.3 | 1679.8 |
| 47.5° | 2630.0 | 2335.6 | 1887.5 | 1592.6 | 1501.6 |
| 50° | 2455.7 | 2161.2 | 1704.9 | 1418.4 | 1331.7 |
| 52.5° | 2285.3 | 1974.2 | 1530.6 | 1256.8 | 1178.1 |
| 55° | 2119.4 | 1796.0 | 1348.0 | 1099.4 | 1020.5 |
| 57.5° | 1949.6 | 1617.7 | 1186.5 | 954.1 | 887.6 |
| 60° | 1775.3 | 1443.5 | 1016.2 | 804.9 | 738.5 |
| 62.5° | 1605.4 | 1273.6 | 870.9 | 672.1 | 639.0 |
| 65° | 1431.2 | 1094.9 | 721.7 | 580.9 | 568.1 |
| 67.5° | 1265.3 | 929.0 | 580.9 | 510.0 | 497.7 |
| 70° | 1090.9 | 767.5 | 481.0 | 439.6 | 423.0 |
| 72.5° | 925.0 | 617.8 | 402.2 | 369.2 | 360.9 |
| 75° | 763.1 | 472.7 | 331.8 | 302.8 | 298.8 |
| 77.5° | 601.6 | 335.8 | 261.4 | 244.6 | 236.3 |
| 80° | 451.9 | 240.8 | 199.0 | 182.7 | 182.7 |
| 82.5° | 315.1 | 161.9 | 136.9 | 128.5 | 128.5 |
| 85° | 178.2 | 91.0 | 78.7 | 78.7 | 78.7 |
| 87.5° | 66.4 | 33.0 | 33.0 | 29.1 | 29.1 |
| 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 |



TEST NUMBER: P912014

CATALOG NUMBER: DFN2DIP-SQ3F0-100D040US850-RLFL

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 | 14.62 | 15.65 | 15.38 | 16.43 | 17.38 | 10.58 | 11.61 | 11.34 | 12.39 | 13.34 |
| | 3H | 16.30 | 17.23 | 17.08 | 18.02 | 19.00 | 11.77 | 12.70 | 12.55 | 13.49 | 14.47 |
| | 4H | 16.92 | 17.79 | 17.72 | 18.59 | 19.58 | 12.23 | 13.10 | 13.03 | 13.90 | 14.89 |
| | 6H | 17.35 | 18.15 | 18.16 | 18.96 | 19.96 | 12.55 | 13.36 | 13.36 | 14.17 | 15.17 |
| | 8H | 17.48 | 18.24 | 18.30 | 19.07 | 20.07 | 12.65 | 13.41 | 13.47 | 14.24 | 15.24 |
| | 12H | 17.54 | 18.27 | 18.37 | 19.09 | 20.12 | 12.69 | 13.42 | 13.52 | 14.24 | 15.27 |
| 4H | 2H | 14.66 | 15.53 | 15.46 | 16.33 | 17.32 | 11.19 | 12.07 | 11.99 | 12.86 | 13.85 |
| | 3H | 16.50 | 17.22 | 17.31 | 18.06 | 19.06 | 12.56 | 13.28 | 13.37 | 14.11 | 15.12 |
| | 4H | 17.20 | 17.85 | 18.02 | 18.68 | 19.72 | 13.11 | 13.76 | 13.93 | 14.60 | 15.63 |
| | 6H | 17.72 | 18.28 | 18.56 | 19.14 | 20.18 | 13.53 | 14.10 | 14.37 | 14.95 | 15.99 |
| | 8H | 17.89 | 18.42 | 18.74 | 19.27 | 20.32 | 13.66 | 14.19 | 14.50 | 15.04 | 16.09 |
| | 12H | 17.99 | 18.47 | 18.86 | 19.34 | 20.40 | 13.73 | 14.20 | 14.59 | 15.08 | 16.13 |
| 8H | 4H | 17.18 | 17.71 | 18.02 | 18.56 | 19.61 | 13.40 | 13.93 | 14.24 | 14.78 | 15.83 |
| | 6H | 17.74 | 18.18 | 18.62 | 19.08 | 20.13 | 13.91 | 14.35 | 14.79 | 15.25 | 16.30 |
| | 8H | 17.96 | 18.35 | 18.84 | 19.24 | 20.30 | 14.10 | 14.49 | 14.99 | 15.38 | 16.45 |
| | 12H | 18.10 | 18.44 | 18.99 | 19.32 | 20.45 | 14.22 | 14.57 | 15.11 | 15.45 | 16.57 |
| 12H | 4H | 17.14 | 17.61 | 18.00 | 18.49 | 19.54 | 13.41 | 13.89 | 14.28 | 14.76 | 15.81 |
| | 6H | 17.72 | 18.11 | 18.60 | 19.00 | 20.06 | 13.96 | 14.35 | 14.85 | 15.24 | 16.31 |
| | 8H | 17.95 | 18.29 | 18.83 | 19.17 | 20.29 | 14.18 | 14.52 | 15.06 | 15.40 | 16.52 |