

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: P920124

Luminaire Tested: DFN2DIP-SQ3F0-080D040US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920124  
REPORT IS A COMBINATION OF REPORTS P899869 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-080D040US935-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

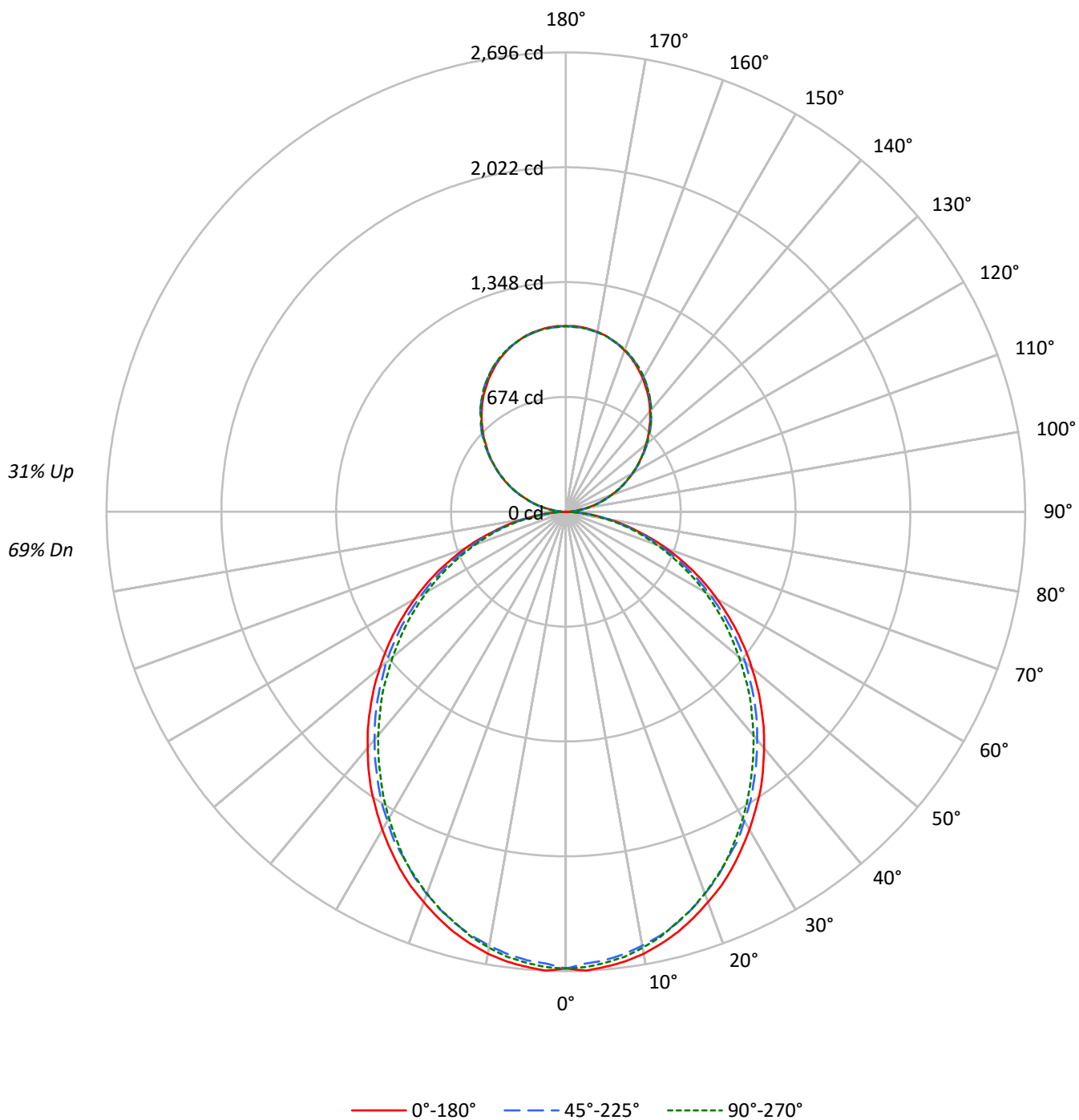
Lumens per Lamp: N/A  
Luminaire Lumens: 9867.0 lumens  
Efficiency: N/A  
Efficacy: 92.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 106.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ3F0-080D040US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P920124

CATALOG NUMBER: DFN2DIP-SQ3F0-080D040US935-FLLFL

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3071 | 3071 | 3071 |
| 5°  | 3074 | 3026 | 3048 |
| 10° | 3047 | 2983 | 3005 |
| 15° | 3000 | 2932 | 2940 |
| 20° | 2938 | 2862 | 2873 |
| 25° | 2876 | 2778 | 2796 |
| 30° | 2798 | 2700 | 2697 |
| 35° | 2724 | 2609 | 2594 |
| 40° | 2634 | 2516 | 2495 |
| 45° | 2544 | 2423 | 2394 |
| 50° | 2445 | 2325 | 2277 |
| 55° | 2342 | 2212 | 2169 |
| 60° | 2225 | 2078 | 2046 |
| 65° | 2097 | 1939 | 1900 |
| 70° | 1934 | 1770 | 1744 |
| 75° | 1708 | 1567 | 1597 |
| 80° | 1436 | 1307 | 1320 |
| 85° | 1011 | 867  | 864  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2544 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 252.3  | 2.6       |
| 10°-20°   | 709.8  | 7.2       |
| 20°-30°   | 1043.1 | 10.6      |
| 30°-40°   | 1211.4 | 12.3      |
| 40°-50°   | 1209.9 | 12.3      |
| 50°-60°   | 1055.0 | 10.7      |
| 60°-70°   | 779.9  | 7.9       |
| 70°-80°   | 441.2  | 4.5       |
| 80°-90°   | 119.6  | 1.2       |
| 90°-100°  | 67.4   | 0.7       |
| 100°-110° | 214.2  | 2.2       |
| 110°-120° | 366.5  | 3.7       |
| 120°-130° | 482.0  | 4.9       |
| 130°-140° | 541.0  | 5.5       |
| 140°-150° | 530.5  | 5.4       |
| 150°-160° | 445.0  | 4.5       |
| 160°-170° | 295.1  | 3.0       |
| 170°-180° | 103.2  | 1.0       |
| 0°-30°    | 2005.1 | 20.3      |
| 0°-40°    | 3216.5 | 32.6      |
| 0°-60°    | 5481.5 | 55.6      |
| 0°-90°    | 6822.2 | 69.1      |
| 90°-120°  | 648.0  | 6.6       |
| 90°-150°  | 2201.5 | 22.3      |
| 90°-180°  | 3045.0 | 30.9      |
| 0°-180°   | 9867.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2680 | 2680  | 2680 | 2680  | 2680 |      |
| 5°   | 2680 | 2670  | 2642 | 2662  | 2657 | 254  |
| 15°  | 2551 | 2536  | 2502 | 2513  | 2500 | 719  |
| 25°  | 2309 | 2289  | 2245 | 2250  | 2245 | 1063 |
| 35°  | 1992 | 1966  | 1925 | 1910  | 1897 | 1244 |
| 45°  | 1621 | 1603  | 1564 | 1536  | 1526 | 1251 |
| 55°  | 1227 | 1211  | 1180 | 1150  | 1137 | 1097 |
| 65°  | 827  | 812   | 786  | 763   | 750  | 818  |
| 75°  | 433  | 428   | 415  | 400   | 405  | 462  |
| 85°  | 106  | 103   | 101  | 93    | 90   | 118  |
| 90°  | 1    | 12    | 32   | 30    | 31   | 9    |
| 95°  | 48   | 57    | 59   | 59    | 57   | 53   |
| 105° | 198  | 200   | 202  | 204   | 204  | 209  |
| 115° | 368  | 373   | 371  | 370   | 368  | 364  |
| 125° | 535  | 543   | 540  | 538   | 537  | 478  |
| 135° | 692  | 702   | 704  | 703   | 700  | 535  |
| 145° | 840  | 846   | 852  | 853   | 849  | 525  |
| 155° | 960  | 963   | 966  | 971   | 968  | 442  |
| 165° | 1045 | 1044  | 1044 | 1050  | 1046 | 295  |
| 175° | 1087 | 1085  | 1083 | 1089  | 1084 | 103  |
| 180° | 1089 | 1089  | 1089 | 1089  | 1089 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2680.1 | 2680.1 | 2680.1 | 2680.1 | 2680.1 |
| 2.5°   | 2695.7 | 2682.9 | 2654.5 | 2680.1 | 2675.2 |
| 5°     | 2680.1 | 2670.0 | 2641.6 | 2662.1 | 2657.2 |
| 7.5°   | 2662.1 | 2646.8 | 2618.4 | 2639.1 | 2634.0 |
| 10°    | 2634.0 | 2615.9 | 2585.0 | 2605.5 | 2597.9 |
| 12.5°  | 2595.1 | 2579.8 | 2548.9 | 2561.7 | 2556.6 |
| 15°    | 2551.4 | 2536.1 | 2502.4 | 2512.8 | 2500.0 |
| 17.5°  | 2497.2 | 2481.9 | 2448.2 | 2461.2 | 2448.2 |
| 20°    | 2437.9 | 2422.6 | 2386.5 | 2394.2 | 2384.0 |
| 22.5°  | 2378.9 | 2355.6 | 2321.9 | 2321.9 | 2316.8 |
| 25°    | 2309.1 | 2288.6 | 2244.9 | 2249.8 | 2244.9 |
| 27.5°  | 2231.7 | 2213.7 | 2180.3 | 2172.6 | 2159.8 |
| 30°    | 2154.6 | 2133.8 | 2095.3 | 2087.7 | 2077.2 |
| 32.5°  | 2072.1 | 2056.8 | 2015.4 | 1999.8 | 1989.5 |
| 35°    | 1992.2 | 1966.5 | 1925.2 | 1909.6 | 1896.8 |
| 37.5°  | 1901.9 | 1878.7 | 1837.5 | 1819.4 | 1806.5 |
| 40°    | 1809.3 | 1788.5 | 1747.2 | 1724.2 | 1713.8 |
| 42.5°  | 1719.1 | 1698.2 | 1657.2 | 1631.2 | 1616.0 |
| 45°    | 1621.2 | 1603.1 | 1564.3 | 1536.1 | 1525.8 |
| 47.5°  | 1525.8 | 1507.7 | 1466.4 | 1438.0 | 1422.6 |
| 50°    | 1425.1 | 1412.3 | 1376.1 | 1340.1 | 1327.2 |
| 52.5°  | 1327.2 | 1309.1 | 1275.8 | 1247.4 | 1229.3 |
| 55°    | 1226.8 | 1211.3 | 1180.4 | 1149.5 | 1136.6 |
| 57.5°  | 1126.3 | 1113.4 | 1079.8 | 1048.9 | 1038.4 |
| 60°    | 1025.6 | 1015.5 | 979.4  | 951.0  | 943.3  |
| 62.5°  | 927.7  | 909.7  | 884.0  | 858.3  | 847.9  |
| 65°    | 827.4  | 811.8  | 786.1  | 762.8  | 750.0  |
| 67.5°  | 724.3  | 711.2  | 688.2  | 670.2  | 659.8  |
| 70°    | 628.9  | 618.5  | 595.3  | 577.2  | 567.1  |
| 72.5°  | 531.0  | 520.6  | 507.7  | 489.7  | 482.1  |
| 75°    | 432.8  | 427.9  | 414.8  | 399.5  | 404.7  |
| 77.5°  | 345.3  | 334.9  | 329.8  | 322.1  | 314.4  |
| 80°    | 257.9  | 255.1  | 249.9  | 242.3  | 237.0  |
| 82.5°  | 175.3  | 175.3  | 172.8  | 162.4  | 162.4  |
| 85°    | 105.6  | 103.1  | 100.7  | 92.7   | 90.2   |
| 87.5°  | 46.5   | 41.3   | 36.1   | 28.4   | 25.7   |
| 90°    | 0.9    | 11.8   | 32.2   | 30.2   | 31.2   |
| 92.5°  | 20.3   | 27.6   | 28.6   | 29.5   | 29.5   |
| 95°    | 48.0   | 57.2   | 58.8   | 58.8   | 57.2   |
| 97.5°  | 79.8   | 88.3   | 92.0   | 92.0   | 92.0   |
| 100°   | 116.6  | 124.2  | 126.7  | 126.7  | 125.8  |
| 102.5° | 155.3  | 160.9  | 164.5  | 165.5  | 164.5  |
| 105°   | 197.7  | 200.3  | 202.2  | 203.9  | 203.9  |
| 107.5° | 239.7  | 243.7  | 243.7  | 244.3  | 239.7  |
| 110°   | 280.4  | 285.7  | 285.7  | 285.7  | 283.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 324.4  | 330.0  | 329.0  | 326.4  | 324.4  |
| 115°   | 367.7  | 373.1  | 371.3  | 370.4  | 367.7  |
| 117.5° | 410.8  | 418.0  | 413.5  | 410.8  | 408.2  |
| 120°   | 454.2  | 461.3  | 454.2  | 454.2  | 451.2  |
| 122.5° | 493.5  | 502.7  | 498.2  | 495.5  | 493.5  |
| 125°   | 534.9  | 543.1  | 540.5  | 537.5  | 536.6  |
| 127.5° | 575.3  | 585.5  | 581.9  | 577.9  | 575.3  |
| 130°   | 613.0  | 624.9  | 623.3  | 621.3  | 617.7  |
| 132.5° | 655.4  | 664.6  | 665.3  | 660.6  | 658.1  |
| 135°   | 691.9  | 702.1  | 704.0  | 703.0  | 700.4  |
| 137.5° | 732.6  | 740.8  | 742.4  | 741.7  | 737.9  |
| 140°   | 768.4  | 776.6  | 781.2  | 781.2  | 777.6  |
| 142.5° | 805.2  | 813.4  | 816.0  | 817.0  | 813.4  |
| 145°   | 840.0  | 846.5  | 851.8  | 852.8  | 849.2  |
| 147.5° | 871.2  | 879.3  | 883.3  | 884.9  | 881.3  |
| 150°   | 903.4  | 909.0  | 912.6  | 915.5  | 912.6  |
| 152.5° | 931.9  | 937.5  | 942.1  | 945.7  | 942.1  |
| 155°   | 960.4  | 963.1  | 966.0  | 970.7  | 967.7  |
| 157.5° | 985.2  | 987.0  | 988.7  | 995.3  | 990.7  |
| 160°   | 1007.1 | 1009.1 | 1010.0 | 1015.6 | 1011.7 |
| 162.5° | 1027.4 | 1027.4 | 1028.5 | 1034.7 | 1030.1 |
| 165°   | 1044.9 | 1043.9 | 1043.9 | 1050.4 | 1045.9 |
| 167.5° | 1060.7 | 1057.6 | 1057.6 | 1064.3 | 1059.6 |
| 170°   | 1072.5 | 1069.8 | 1068.8 | 1075.4 | 1069.8 |
| 172.5° | 1080.6 | 1078.1 | 1077.0 | 1083.7 | 1078.1 |
| 175°   | 1087.3 | 1084.6 | 1082.6 | 1089.2 | 1083.7 |
| 177.5° | 1090.9 | 1088.2 | 1086.2 | 1091.8 | 1086.2 |
| 180°   | 1089.2 | 1089.2 | 1089.2 | 1089.2 | 1089.2 |

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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 | 12.74            | 13.80 | 13.51 | 14.60 | 15.57 | 12.29          | 13.36 | 13.07 | 14.15 | 15.12 |
|                 | 3H   | 14.41            | 15.37 | 15.20 | 16.17 | 17.17 | 13.92          | 14.88 | 14.71 | 15.68 | 16.68 |
|                 | 4H   | 15.00            | 15.91 | 15.81 | 16.72 | 17.73 | 14.51          | 15.41 | 15.31 | 16.23 | 17.24 |
|                 | 6H   | 15.41            | 16.24 | 16.23 | 17.07 | 18.09 | 14.91          | 15.74 | 15.73 | 16.57 | 17.59 |
|                 | 8H   | 15.52            | 16.31 | 16.34 | 17.15 | 18.18 | 15.02          | 15.81 | 15.84 | 16.65 | 17.68 |
|                 | 12H  | 15.57            | 16.33 | 16.40 | 17.16 | 18.21 | 15.06          | 15.82 | 15.89 | 16.65 | 17.71 |
| 4H              | 2H   | 13.22            | 14.12 | 14.03 | 14.94 | 15.95 | 12.87          | 13.77 | 13.67 | 14.58 | 15.59 |
|                 | 3H   | 15.10            | 15.85 | 15.92 | 16.70 | 17.73 | 14.69          | 15.44 | 15.51 | 16.29 | 17.32 |
|                 | 4H   | 15.82            | 16.50 | 16.65 | 17.35 | 18.40 | 15.39          | 16.08 | 16.23 | 16.93 | 17.98 |
|                 | 6H   | 16.34            | 16.93 | 17.19 | 17.80 | 18.86 | 15.91          | 16.50 | 16.76 | 17.37 | 18.43 |
|                 | 8H   | 16.49            | 17.05 | 17.35 | 17.91 | 18.98 | 16.05          | 16.61 | 16.91 | 17.48 | 18.55 |
|                 | 12H  | 16.57            | 17.07 | 17.45 | 17.96 | 19.03 | 16.12          | 16.62 | 17.00 | 17.51 | 18.59 |
| 8H              | 4H   | 16.03            | 16.58 | 16.88 | 17.45 | 18.52 | 15.65          | 16.20 | 16.50 | 17.07 | 18.14 |
|                 | 6H   | 16.66            | 17.12 | 17.54 | 18.03 | 19.10 | 16.28          | 16.74 | 17.16 | 17.64 | 18.71 |
|                 | 8H   | 16.88            | 17.29 | 17.77 | 18.19 | 19.28 | 16.49          | 16.89 | 17.38 | 17.80 | 18.88 |
|                 | 12H  | 17.02            | 17.38 | 17.91 | 18.27 | 19.41 | 16.61          | 16.97 | 17.50 | 17.86 | 19.00 |
| 12H             | 4H   | 16.02            | 16.52 | 16.89 | 17.41 | 18.48 | 15.65          | 16.15 | 16.53 | 17.04 | 18.11 |
|                 | 6H   | 16.69            | 17.10 | 17.58 | 18.00 | 19.09 | 16.32          | 16.73 | 17.21 | 17.63 | 18.72 |
|                 | 8H   | 16.94            | 17.30 | 17.83 | 18.19 | 19.33 | 16.56          | 16.92 | 17.45 | 17.81 | 18.95 |

END OF REPORT