

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: P908744

Luminaire Tested: DFN2DIP-PN4F0-080D040US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908744  
REPORT IS A COMBINATION OF REPORTS P899617 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-080D040US840-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

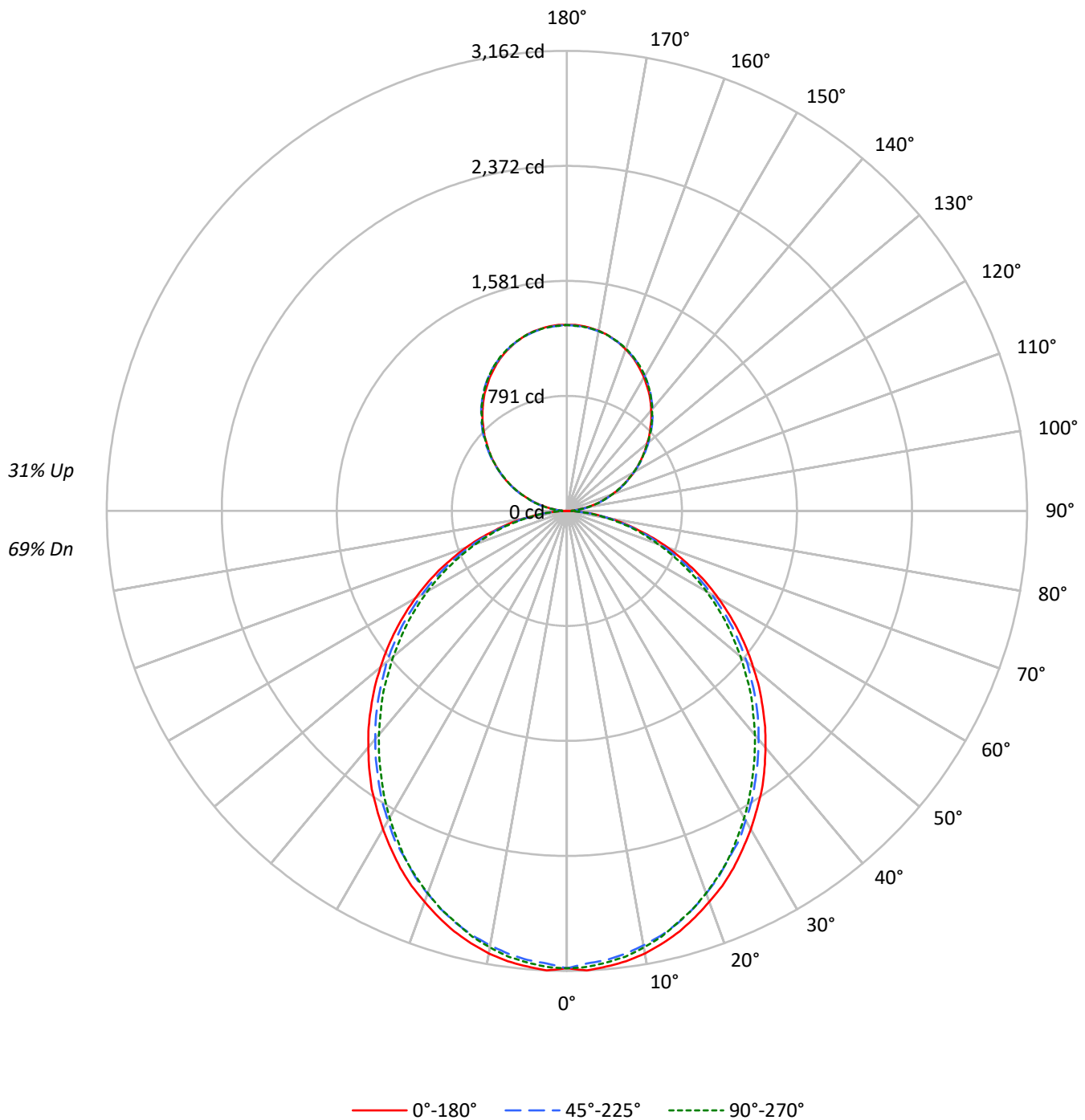
Lumens per Lamp: N/A  
Luminaire Lumens: 11573.1 lumens  
Efficiency: N/A  
Efficacy: 107.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 107.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P908744

CATALOG NUMBER: DFN2DIP-PN4F0-080D040US840-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P908744

CATALOG NUMBER: DFN2DIP-PN4F0-080D040US840-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 | 35 | 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°  | 2295 | 2295 | 2295 |
| 5°  | 2298 | 2263 | 2278 |
| 10° | 2280 | 2233 | 2248 |
| 15° | 2246 | 2196 | 2200 |
| 20° | 2201 | 2146 | 2151 |
| 25° | 2156 | 2085 | 2095 |
| 30° | 2099 | 2028 | 2022 |
| 35° | 2046 | 1962 | 1946 |
| 40° | 1980 | 1894 | 1873 |
| 45° | 1914 | 1827 | 1799 |
| 50° | 1842 | 1756 | 1713 |
| 55° | 1767 | 1674 | 1634 |
| 60° | 1682 | 1576 | 1544 |
| 65° | 1590 | 1476 | 1437 |
| 70° | 1472 | 1353 | 1322 |
| 75° | 1308 | 1206 | 1217 |
| 80° | 1112 | 1020 | 1015 |
| 85° | 804  | 696  | 679  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1914 cd/sqm

TEST NUMBER: P908744

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 295.9   | 2.6       |
| 10°-20°   | 832.5   | 7.2       |
| 20°-30°   | 1223.4  | 10.6      |
| 30°-40°   | 1420.9  | 12.3      |
| 40°-50°   | 1419.1  | 12.3      |
| 50°-60°   | 1237.5  | 10.7      |
| 60°-70°   | 914.7   | 7.9       |
| 70°-80°   | 517.6   | 4.5       |
| 80°-90°   | 140.2   | 1.2       |
| 90°-100°  | 79.1    | 0.7       |
| 100°-110° | 251.2   | 2.2       |
| 110°-120° | 429.8   | 3.7       |
| 120°-130° | 565.3   | 4.9       |
| 130°-140° | 634.5   | 5.5       |
| 140°-150° | 622.2   | 5.4       |
| 150°-160° | 522.0   | 4.5       |
| 160°-170° | 346.2   | 3.0       |
| 170°-180° | 121.0   | 1.0       |
| 0°-30°    | 2351.8  | 20.3      |
| 0°-40°    | 3772.7  | 32.6      |
| 0°-60°    | 6429.3  | 55.6      |
| 0°-90°    | 8001.8  | 69.1      |
| 90°-120°  | 760.1   | 6.6       |
| 90°-150°  | 2582.2  | 22.3      |
| 90°-180°  | 3571.0  | 30.9      |
| 0°-180°   | 11573.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3144 | 3144  | 3144 | 3144  | 3144 |      |
| 5°   | 3144 | 3132  | 3098 | 3122  | 3117 | 298  |
| 15°  | 2992 | 2975  | 2935 | 2947  | 2932 | 843  |
| 25°  | 2708 | 2684  | 2633 | 2639  | 2633 | 1246 |
| 35°  | 2337 | 2306  | 2258 | 2240  | 2225 | 1459 |
| 45°  | 1902 | 1880  | 1835 | 1802  | 1790 | 1467 |
| 55°  | 1439 | 1421  | 1384 | 1348  | 1333 | 1287 |
| 65°  | 970  | 952   | 922  | 895   | 880  | 959  |
| 75°  | 508  | 502   | 487  | 469   | 475  | 542  |
| 85°  | 124  | 121   | 118  | 109   | 106  | 138  |
| 90°  | 1    | 14    | 38   | 35    | 37   | 11   |
| 95°  | 56   | 67    | 69   | 69    | 67   | 63   |
| 105° | 232  | 235   | 237  | 239   | 239  | 245  |
| 115° | 431  | 438   | 436  | 434   | 431  | 427  |
| 125° | 627  | 637   | 634  | 630   | 629  | 561  |
| 135° | 812  | 823   | 826  | 825   | 822  | 627  |
| 145° | 985  | 993   | 999  | 1000  | 996  | 616  |
| 155° | 1126 | 1130  | 1133 | 1138  | 1135 | 519  |
| 165° | 1226 | 1224  | 1224 | 1232  | 1227 | 346  |
| 175° | 1275 | 1272  | 1270 | 1278  | 1271 | 121  |
| 180° | 1278 | 1278  | 1278 | 1278  | 1278 |      |

TEST NUMBER: P908744

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3143.5 | 3143.5 | 3143.5 | 3143.5 | 3143.5 |
| 2.5°   | 3161.8 | 3146.7 | 3113.4 | 3143.5 | 3137.8 |
| 5°     | 3143.5 | 3131.7 | 3098.4 | 3122.4 | 3116.6 |
| 7.5°   | 3122.4 | 3104.4 | 3071.1 | 3095.4 | 3089.4 |
| 10°    | 3089.4 | 3068.2 | 3031.9 | 3056.0 | 3047.1 |
| 12.5°  | 3043.8 | 3025.9 | 2989.6 | 3004.7 | 2998.6 |
| 15°    | 2992.5 | 2974.6 | 2935.1 | 2947.3 | 2932.2 |
| 17.5°  | 2929.0 | 2911.0 | 2871.6 | 2886.7 | 2871.6 |
| 20°    | 2859.4 | 2841.5 | 2799.1 | 2808.1 | 2796.2 |
| 22.5°  | 2790.2 | 2762.9 | 2723.4 | 2723.4 | 2717.3 |
| 25°    | 2708.4 | 2684.3 | 2633.0 | 2638.8 | 2633.0 |
| 27.5°  | 2617.6 | 2596.5 | 2557.3 | 2548.3 | 2533.2 |
| 30°    | 2527.2 | 2502.7 | 2457.6 | 2448.6 | 2436.4 |
| 32.5°  | 2430.3 | 2412.4 | 2363.9 | 2345.6 | 2333.5 |
| 35°    | 2336.6 | 2306.5 | 2258.1 | 2239.8 | 2224.7 |
| 37.5°  | 2230.8 | 2203.5 | 2155.2 | 2133.9 | 2118.9 |
| 40°    | 2122.1 | 2097.7 | 2049.3 | 2022.4 | 2010.1 |
| 42.5°  | 2016.3 | 1991.9 | 1943.8 | 1913.3 | 1895.4 |
| 45°    | 1901.5 | 1880.3 | 1834.7 | 1801.7 | 1789.6 |
| 47.5°  | 1789.6 | 1768.4 | 1719.9 | 1686.6 | 1668.6 |
| 50°    | 1671.5 | 1656.5 | 1614.1 | 1571.8 | 1556.7 |
| 52.5°  | 1556.7 | 1535.5 | 1496.4 | 1463.1 | 1441.9 |
| 55°    | 1439.0 | 1420.7 | 1384.5 | 1348.3 | 1333.1 |
| 57.5°  | 1321.0 | 1306.0 | 1266.5 | 1230.2 | 1218.0 |
| 60°    | 1203.0 | 1191.1 | 1148.7 | 1115.4 | 1106.4 |
| 62.5°  | 1088.1 | 1067.0 | 1036.8 | 1006.7 | 994.5  |
| 65°    | 970.5  | 952.2  | 922.0  | 894.7  | 879.7  |
| 67.5°  | 849.5  | 834.1  | 807.2  | 786.1  | 773.9  |
| 70°    | 737.6  | 725.4  | 698.2  | 677.0  | 665.1  |
| 72.5°  | 622.8  | 610.7  | 595.5  | 574.4  | 565.4  |
| 75°    | 507.7  | 501.9  | 486.6  | 468.6  | 474.6  |
| 77.5°  | 405.1  | 392.8  | 386.8  | 377.8  | 368.8  |
| 80°    | 302.5  | 299.2  | 293.2  | 284.2  | 278.0  |
| 82.5°  | 205.6  | 205.6  | 202.7  | 190.5  | 190.5  |
| 85°    | 123.8  | 120.9  | 118.1  | 108.8  | 105.8  |
| 87.5°  | 54.5   | 48.5   | 42.3   | 33.3   | 30.2   |
| 90°    | 1.1    | 13.8   | 37.8   | 35.4   | 36.6   |
| 92.5°  | 23.8   | 32.3   | 33.5   | 34.6   | 34.6   |
| 95°    | 56.2   | 67.1   | 69.0   | 69.0   | 67.1   |
| 97.5°  | 93.6   | 103.6  | 107.9  | 107.9  | 107.9  |
| 100°   | 136.7  | 145.6  | 148.7  | 148.7  | 147.5  |
| 102.5° | 182.2  | 188.7  | 193.0  | 194.1  | 193.0  |
| 105°   | 231.9  | 234.9  | 237.2  | 239.1  | 239.1  |
| 107.5° | 281.1  | 285.8  | 285.8  | 286.5  | 281.1  |
| 110°   | 328.9  | 335.1  | 335.1  | 335.1  | 332.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 380.5  | 387.1  | 385.9  | 382.8  | 380.5  |
| 115°   | 431.3  | 437.6  | 435.6  | 434.4  | 431.3  |
| 117.5° | 481.8  | 490.3  | 484.9  | 481.8  | 478.8  |
| 120°   | 532.7  | 541.1  | 532.7  | 532.7  | 529.2  |
| 122.5° | 578.9  | 589.7  | 584.3  | 581.2  | 578.9  |
| 125°   | 627.4  | 637.0  | 634.0  | 630.5  | 629.3  |
| 127.5° | 674.8  | 686.7  | 682.5  | 677.8  | 674.8  |
| 130°   | 719.0  | 733.0  | 731.0  | 728.7  | 724.5  |
| 132.5° | 768.7  | 779.5  | 780.3  | 774.9  | 771.8  |
| 135°   | 811.5  | 823.4  | 825.8  | 824.6  | 821.5  |
| 137.5° | 859.3  | 868.9  | 870.8  | 870.0  | 865.5  |
| 140°   | 901.2  | 910.9  | 916.3  | 916.3  | 912.0  |
| 142.5° | 944.4  | 954.0  | 957.0  | 958.3  | 954.0  |
| 145°   | 985.2  | 992.9  | 999.1  | 1000.3 | 996.0  |
| 147.5° | 1021.8 | 1031.4 | 1036.0 | 1037.9 | 1033.7 |
| 150°   | 1059.6 | 1066.1 | 1070.4 | 1073.8 | 1070.4 |
| 152.5° | 1093.1 | 1099.5 | 1105.0 | 1109.2 | 1105.0 |
| 155°   | 1126.5 | 1129.6 | 1133.1 | 1138.5 | 1135.0 |
| 157.5° | 1155.5 | 1157.7 | 1159.6 | 1167.4 | 1162.0 |
| 160°   | 1181.2 | 1183.6 | 1184.7 | 1191.2 | 1186.6 |
| 162.5° | 1205.1 | 1205.1 | 1206.3 | 1213.6 | 1208.2 |
| 165°   | 1225.6 | 1224.4 | 1224.4 | 1232.0 | 1226.7 |
| 167.5° | 1244.1 | 1240.5 | 1240.5 | 1248.3 | 1242.8 |
| 170°   | 1257.9 | 1254.8 | 1253.6 | 1261.3 | 1254.8 |
| 172.5° | 1267.5 | 1264.5 | 1263.2 | 1271.0 | 1264.5 |
| 175°   | 1275.3 | 1272.1 | 1269.8 | 1277.5 | 1271.0 |
| 177.5° | 1279.5 | 1276.4 | 1274.0 | 1280.6 | 1274.0 |
| 180°   | 1277.5 | 1277.5 | 1277.5 | 1277.5 | 1277.5 |

TEST NUMBER: P908744

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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 | 11.77            | 12.83 | 12.54 | 13.63 | 14.60 | 11.33          | 12.39 | 12.10 | 13.19 | 14.16 |
|                 | 3H   | 13.45            | 14.40 | 14.23 | 15.21 | 16.21 | 12.96          | 13.92 | 13.75 | 14.72 | 15.72 |
|                 | 4H   | 14.04            | 14.95 | 14.85 | 15.76 | 16.77 | 13.56          | 14.46 | 14.36 | 15.27 | 16.28 |
|                 | 6H   | 14.46            | 15.29 | 15.27 | 16.11 | 17.14 | 13.96          | 14.80 | 14.78 | 15.62 | 16.64 |
|                 | 8H   | 14.57            | 15.36 | 15.39 | 16.20 | 17.23 | 14.08          | 14.87 | 14.90 | 15.71 | 16.73 |
|                 | 12H  | 14.62            | 15.38 | 15.46 | 16.22 | 17.27 | 14.12          | 14.88 | 14.96 | 15.72 | 16.77 |
| 4H              | 2H   | 12.25            | 13.16 | 13.06 | 13.97 | 14.98 | 11.90          | 12.80 | 12.71 | 13.62 | 14.63 |
|                 | 3H   | 14.14            | 14.89 | 14.96 | 15.74 | 16.77 | 13.74          | 14.49 | 14.56 | 15.34 | 16.37 |
|                 | 4H   | 14.87            | 15.55 | 15.70 | 16.40 | 17.45 | 14.45          | 15.13 | 15.28 | 15.98 | 17.03 |
|                 | 6H   | 15.39            | 15.99 | 16.24 | 16.86 | 17.92 | 14.97          | 15.56 | 15.82 | 16.43 | 17.49 |
|                 | 8H   | 15.55            | 16.11 | 16.40 | 16.97 | 18.04 | 15.12          | 15.68 | 15.98 | 16.54 | 17.61 |
|                 | 12H  | 15.63            | 16.14 | 16.51 | 17.02 | 18.10 | 15.19          | 15.69 | 16.07 | 16.58 | 17.66 |
| 8H              | 4H   | 15.08            | 15.63 | 15.93 | 16.50 | 17.57 | 14.71          | 15.26 | 15.56 | 16.13 | 17.20 |
|                 | 6H   | 15.72            | 16.18 | 16.60 | 17.09 | 18.16 | 15.34          | 15.80 | 16.23 | 16.71 | 17.78 |
|                 | 8H   | 15.95            | 16.35 | 16.84 | 17.26 | 18.34 | 15.56          | 15.97 | 16.45 | 16.87 | 17.96 |
|                 | 12H  | 16.09            | 16.45 | 16.98 | 17.34 | 18.48 | 15.69          | 16.05 | 16.58 | 16.94 | 18.08 |
| 12H             | 4H   | 15.07            | 15.57 | 15.95 | 16.46 | 17.54 | 14.71          | 15.21 | 15.58 | 16.10 | 17.17 |
|                 | 6H   | 15.75            | 16.16 | 16.65 | 17.06 | 18.15 | 15.39          | 15.80 | 16.28 | 16.70 | 17.79 |
|                 | 8H   | 16.01            | 16.37 | 16.90 | 17.26 | 18.40 | 15.63          | 15.99 | 16.53 | 16.89 | 18.03 |

END OF REPORT