

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: P914359

Luminaire Tested: DFN2DIP-PN4F0-120D070US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914359  
REPORT IS A COMBINATION OF REPORTS P901200 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D070US927-RLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

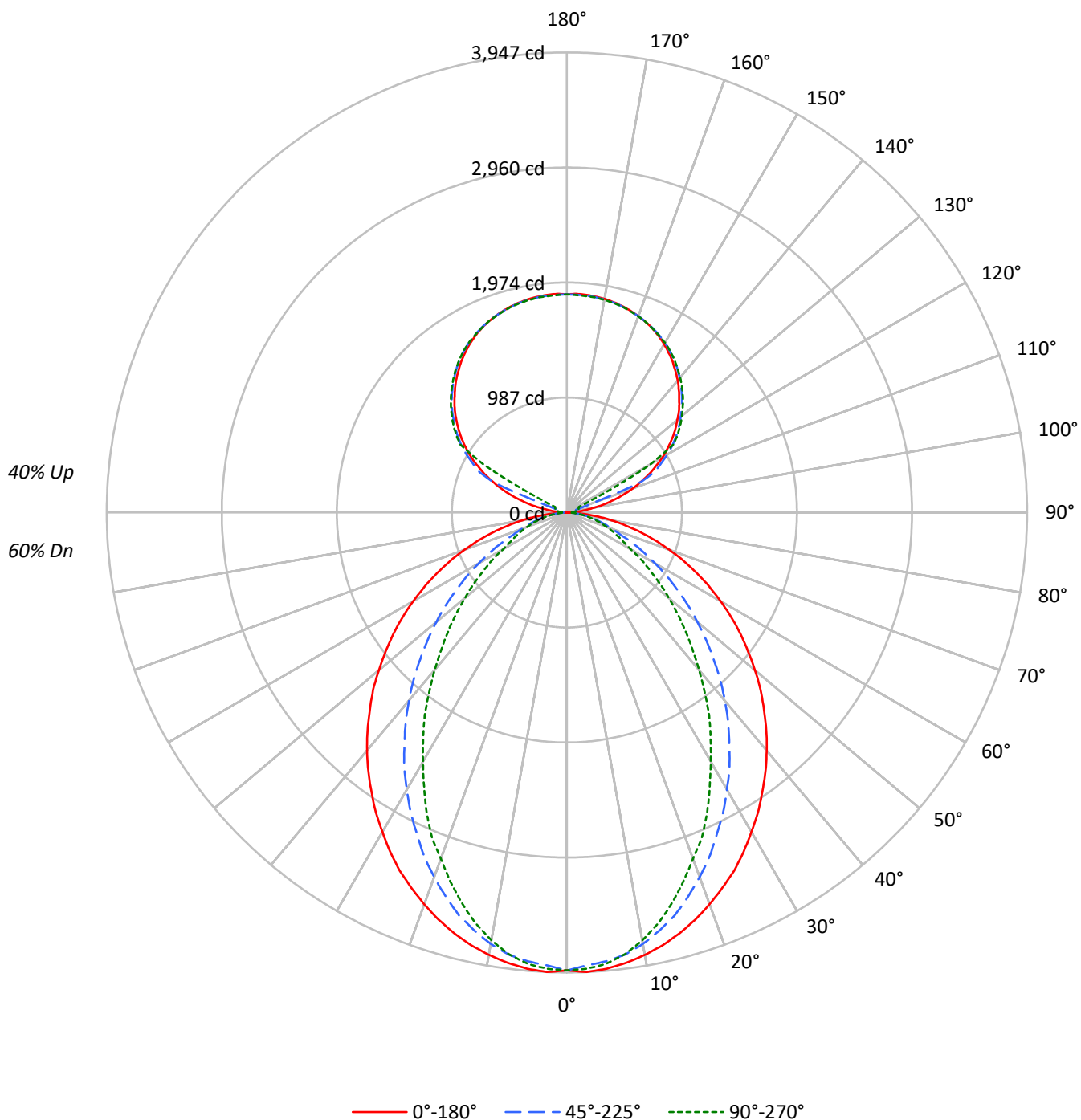
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13570.1 lumens  
Efficiency: N/A  
Efficacy: 75.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 178.8  
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



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**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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 76 | 76 | 76 | 65 | 65 | 65 |
| 1   | 101 | 96  | 93  | 89  | 94  | 90  | 87  | 84  | 79 | 76 | 74 | 68 | 66 | 65 | 58 | 57 | 56 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 74  | 70  | 70 | 66 | 62 | 60 | 58 | 55 | 52 | 50 | 48 |
| 3   | 84  | 75  | 68  | 62  | 79  | 71  | 64  | 59  | 62 | 57 | 53 | 54 | 50 | 47 | 47 | 44 | 42 |
| 4   | 77  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 |
| 5   | 71  | 60  | 52  | 46  | 67  | 56  | 49  | 44  | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 35 | 32 |
| 6   | 66  | 54  | 46  | 40  | 62  | 51  | 44  | 39  | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 26 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 31  | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2868 | 2868 | 2868 |
| 5°  | 2873 | 2823 | 2841 |
| 10° | 2844 | 2768 | 2749 |
| 15° | 2805 | 2677 | 2607 |
| 20° | 2753 | 2551 | 2432 |
| 25° | 2700 | 2410 | 2263 |
| 30° | 2629 | 2265 | 2048 |
| 35° | 2559 | 2110 | 1860 |
| 40° | 2488 | 1949 | 1644 |
| 45° | 2406 | 1770 | 1448 |
| 50° | 2320 | 1590 | 1256 |
| 55° | 2231 | 1397 | 1072 |
| 60° | 2128 | 1195 | 883  |
| 65° | 2010 | 990  | 796  |
| 70° | 1866 | 799  | 721  |
| 75° | 1685 | 705  | 657  |
| 80° | 1424 | 593  | 571  |
| 85° | 992  | 398  | 433  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2406 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 368.2   | 2.7       |
| 10°-20°   | 1010.8  | 7.4       |
| 20°-30°   | 1419.2  | 10.5      |
| 30°-40°   | 1547.0  | 11.4      |
| 40°-50°   | 1421.9  | 10.5      |
| 50°-60°   | 1116.7  | 8.2       |
| 60°-70°   | 726.9   | 5.4       |
| 70°-80°   | 374.2   | 2.8       |
| 80°-90°   | 98.8    | 0.7       |
| 90°-100°  | 61.7    | 0.5       |
| 100°-110° | 230.0   | 1.7       |
| 110°-120° | 610.1   | 4.5       |
| 120°-130° | 1011.9  | 7.5       |
| 130°-140° | 1074.9  | 7.9       |
| 140°-150° | 999.0   | 7.4       |
| 150°-160° | 803.2   | 5.9       |
| 160°-170° | 517.5   | 3.8       |
| 170°-180° | 178.1   | 1.3       |
| 0°-30°    | 2798.2  | 20.6      |
| 0°-40°    | 4345.2  | 32.0      |
| 0°-60°    | 6883.7  | 50.7      |
| 0°-90°    | 8083.6  | 59.6      |
| 90°-120°  | 901.9   | 6.6       |
| 90°-150°  | 3987.7  | 29.4      |
| 90°-180°  | 5487.0  | 40.4      |
| 0°-180°   | 13570.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3929 | 3929  | 3929 | 3929  | 3929 |      |
| 5°   | 3929 | 3911  | 3865 | 3897  | 3886 | 373  |
| 15°  | 3737 | 3698  | 3577 | 3509  | 3474 | 1053 |
| 25°  | 3392 | 3278  | 3044 | 2898  | 2844 | 1560 |
| 35°  | 2923 | 2741  | 2429 | 2205  | 2126 | 1829 |
| 45°  | 2389 | 2151  | 1778 | 1525  | 1440 | 1845 |
| 55°  | 1817 | 1540  | 1156 | 942   | 875  | 1623 |
| 65°  | 1227 | 939   | 619  | 498   | 487  | 1216 |
| 75°  | 654  | 405   | 284  | 260   | 256  | 692  |
| 85°  | 153  | 78    | 68   | 68    | 68   | 175  |
| 90°  | 1    | 16    | 27   | 34    | 36   | 13   |
| 95°  | 88   | 43    | 53   | 60    | 58   | 104  |
| 105° | 412  | 452   | 83   | 97    | 103  | 440  |
| 115° | 779  | 802   | 836  | 209   | 111  | 767  |
| 125° | 1101 | 1119  | 1144 | 1154  | 1158 | 982  |
| 135° | 1362 | 1384  | 1396 | 1410  | 1407 | 1052 |
| 145° | 1580 | 1579  | 1602 | 1612  | 1605 | 988  |
| 155° | 1740 | 1728  | 1744 | 1752  | 1742 | 802  |
| 165° | 1834 | 1826  | 1830 | 1839  | 1830 | 518  |
| 175° | 1876 | 1866  | 1869 | 1878  | 1865 | 178  |
| 180° | 1871 | 1871  | 1871 | 1871  | 1871 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3928.9 | 3928.9 | 3928.9 | 3928.9 | 3928.9 |
| 2.5°   | 3946.6 | 3928.9 | 3889.7 | 3925.5 | 3918.3 |
| 5°     | 3928.9 | 3911.2 | 3864.7 | 3896.8 | 3886.3 |
| 7.5°   | 3896.8 | 3875.7 | 3825.9 | 3839.9 | 3822.1 |
| 10°    | 3854.2 | 3829.3 | 3758.3 | 3747.4 | 3726.3 |
| 12.5°  | 3801.0 | 3769.0 | 3672.7 | 3651.6 | 3612.4 |
| 15°    | 3736.9 | 3697.7 | 3576.9 | 3509.4 | 3474.0 |
| 17.5°  | 3662.2 | 3605.2 | 3455.8 | 3377.8 | 3320.8 |
| 20°    | 3576.9 | 3505.6 | 3328.0 | 3239.3 | 3160.8 |
| 22.5°  | 3484.5 | 3402.7 | 3196.3 | 3075.6 | 3022.4 |
| 25°    | 3392.1 | 3278.1 | 3043.5 | 2897.9 | 2844.3 |
| 27.5°  | 3281.9 | 3160.8 | 2901.3 | 2734.2 | 2652.3 |
| 30°    | 3164.6 | 3029.2 | 2744.7 | 2563.7 | 2467.5 |
| 32.5°  | 3050.7 | 2886.9 | 2595.7 | 2382.2 | 2293.2 |
| 35°    | 2922.8 | 2741.3 | 2428.6 | 2204.6 | 2126.1 |
| 37.5°  | 2798.3 | 2602.6 | 2272.1 | 2026.5 | 1937.8 |
| 40°    | 2666.6 | 2453.5 | 2108.4 | 1856.0 | 1763.6 |
| 42.5°  | 2531.6 | 2304.1 | 1945.0 | 1681.7 | 1593.1 |
| 45°    | 2389.4 | 2151.0 | 1777.9 | 1525.2 | 1439.9 |
| 47.5°  | 2254.3 | 2002.0 | 1618.0 | 1365.2 | 1287.1 |
| 50°    | 2105.0 | 1852.6 | 1461.4 | 1215.8 | 1141.5 |
| 52.5°  | 1959.0 | 1692.3 | 1312.0 | 1077.4 | 1009.9 |
| 55°    | 1816.8 | 1539.5 | 1155.5 | 942.3  | 874.8  |
| 57.5°  | 1671.1 | 1386.7 | 1017.0 | 817.8  | 760.9  |
| 60°    | 1521.8 | 1237.3 | 871.0  | 690.0  | 633.0  |
| 62.5°  | 1376.2 | 1091.7 | 746.6  | 576.1  | 547.7  |
| 65°    | 1226.8 | 938.6  | 618.7  | 498.0  | 487.0  |
| 67.5°  | 1084.6 | 796.3  | 498.0  | 437.2  | 426.7  |
| 70°    | 935.2  | 657.9  | 412.3  | 376.8  | 362.5  |
| 72.5°  | 793.0  | 529.7  | 344.8  | 316.5  | 309.3  |
| 75°    | 654.1  | 405.1  | 284.5  | 259.5  | 256.1  |
| 77.5°  | 515.7  | 287.8  | 224.1  | 209.8  | 202.6  |
| 80°    | 387.5  | 206.4  | 170.5  | 156.5  | 156.5  |
| 82.5°  | 270.1  | 138.8  | 117.3  | 110.1  | 110.1  |
| 85°    | 152.8  | 78.1   | 67.5   | 67.5   | 67.5   |
| 87.5°  | 57.0   | 28.3   | 28.3   | 24.9   | 24.9   |
| 90°    | 1.3    | 16.2   | 27.0   | 33.9   | 36.5   |
| 92.5°  | 33.9   | 28.4   | 32.5   | 35.3   | 36.5   |
| 95°    | 87.9   | 43.3   | 52.8   | 59.7   | 58.2   |
| 97.5°  | 158.4  | 47.5   | 69.0   | 73.2   | 74.5   |
| 100°   | 239.8  | 54.2   | 77.2   | 87.9   | 90.7   |
| 102.5° | 329.0  | 326.5  | 79.9   | 94.7   | 98.9   |
| 105°   | 411.7  | 452.3  | 82.6   | 97.4   | 102.9  |
| 107.5° | 507.8  | 541.6  | 85.4   | 100.2  | 105.7  |
| 110°   | 600.0  | 628.3  | 237.0  | 101.6  | 106.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 686.7  | 710.9  | 687.9  | 104.2  | 108.4  |
| 115°   | 778.6  | 801.6  | 835.5  | 208.6  | 111.1  |
| 117.5° | 858.6  | 885.6  | 908.7  | 714.9  | 360.2  |
| 120°   | 947.9  | 968.2  | 992.7  | 1008.9 | 826.1  |
| 122.5° | 1023.7 | 1045.4 | 1072.6 | 1080.6 | 1082.0 |
| 125°   | 1100.9 | 1118.6 | 1144.3 | 1153.8 | 1157.8 |
| 127.5° | 1171.3 | 1190.3 | 1210.7 | 1224.2 | 1225.5 |
| 130°   | 1237.7 | 1259.4 | 1274.2 | 1289.2 | 1287.9 |
| 132.5° | 1305.4 | 1323.1 | 1337.9 | 1350.1 | 1348.8 |
| 135°   | 1362.3 | 1384.0 | 1396.1 | 1409.8 | 1407.1 |
| 137.5° | 1421.8 | 1438.1 | 1451.8 | 1465.3 | 1461.3 |
| 140°   | 1480.0 | 1491.0 | 1505.8 | 1518.0 | 1511.2 |
| 142.5° | 1528.9 | 1538.4 | 1555.9 | 1566.7 | 1560.0 |
| 145°   | 1580.4 | 1579.0 | 1601.9 | 1611.5 | 1604.7 |
| 147.5° | 1624.9 | 1621.0 | 1643.9 | 1650.7 | 1645.4 |
| 150°   | 1668.3 | 1658.9 | 1680.6 | 1688.6 | 1681.9 |
| 152.5° | 1704.9 | 1694.1 | 1714.4 | 1722.5 | 1713.1 |
| 155°   | 1740.1 | 1728.0 | 1744.2 | 1752.3 | 1741.5 |
| 157.5° | 1768.5 | 1757.8 | 1770.0 | 1779.5 | 1768.5 |
| 160°   | 1793.0 | 1784.8 | 1793.0 | 1801.0 | 1791.5 |
| 162.5° | 1814.6 | 1806.5 | 1813.2 | 1822.7 | 1810.5 |
| 165°   | 1833.5 | 1825.5 | 1829.5 | 1839.0 | 1829.5 |
| 167.5° | 1848.5 | 1840.2 | 1844.4 | 1853.9 | 1841.7 |
| 170°   | 1860.7 | 1852.5 | 1855.2 | 1864.7 | 1852.5 |
| 172.5° | 1868.8 | 1860.7 | 1863.4 | 1872.9 | 1860.7 |
| 175°   | 1875.5 | 1866.0 | 1868.8 | 1878.2 | 1864.7 |
| 177.5° | 1878.2 | 1868.8 | 1870.2 | 1879.7 | 1867.4 |
| 180°   | 1871.4 | 1871.4 | 1871.4 | 1871.4 | 1871.4 |

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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 | 11.66            | 12.58 | 12.54 | 13.47 | 14.60 | 7.63           | 8.54  | 8.51  | 9.44  | 10.57 |
|                 | 3H   | 13.35            | 14.17 | 14.24 | 15.07 | 16.23 | 8.82           | 9.64  | 9.71  | 10.55 | 11.70 |
|                 | 4H   | 13.97            | 14.74 | 14.87 | 15.65 | 16.81 | 9.28           | 10.05 | 10.19 | 10.96 | 12.13 |
|                 | 6H   | 14.39            | 15.10 | 15.31 | 16.02 | 17.20 | 9.61           | 10.32 | 10.52 | 11.23 | 12.41 |
|                 | 8H   | 14.52            | 15.20 | 15.45 | 16.13 | 17.31 | 9.70           | 10.37 | 10.62 | 11.31 | 12.49 |
|                 | 12H  | 14.59            | 15.23 | 15.52 | 16.16 | 17.36 | 9.75           | 10.39 | 10.68 | 11.31 | 12.52 |
| 4H              | 2H   | 11.69            | 12.46 | 12.60 | 13.37 | 14.54 | 8.24           | 9.01  | 9.15  | 9.92  | 11.08 |
|                 | 3H   | 13.53            | 14.17 | 14.45 | 15.11 | 16.30 | 9.60           | 10.24 | 10.52 | 11.18 | 12.36 |
|                 | 4H   | 14.23            | 14.81 | 15.16 | 15.75 | 16.96 | 10.15          | 10.73 | 11.08 | 11.67 | 12.87 |
|                 | 6H   | 14.75            | 15.26 | 15.70 | 16.21 | 17.42 | 10.57          | 11.07 | 11.52 | 12.03 | 13.24 |
|                 | 8H   | 14.93            | 15.40 | 15.88 | 16.35 | 17.57 | 10.70          | 11.17 | 11.65 | 12.13 | 13.35 |
|                 | 12H  | 15.03            | 15.46 | 16.00 | 16.43 | 17.65 | 10.77          | 11.20 | 11.74 | 12.17 | 13.39 |
| 8H              | 4H   | 14.20            | 14.67 | 15.15 | 15.63 | 16.85 | 10.44          | 10.90 | 11.38 | 11.86 | 13.08 |
|                 | 6H   | 14.78            | 15.16 | 15.75 | 16.16 | 17.38 | 10.96          | 11.35 | 11.93 | 12.34 | 13.56 |
|                 | 8H   | 15.00            | 15.34 | 15.98 | 16.32 | 17.56 | 11.15          | 11.49 | 12.13 | 12.48 | 13.71 |
|                 | 12H  | 15.14            | 15.44 | 16.13 | 16.42 | 17.70 | 11.27          | 11.58 | 12.26 | 12.55 | 13.84 |
| 12H             | 4H   | 14.16            | 14.58 | 15.13 | 15.55 | 16.78 | 10.44          | 10.87 | 11.41 | 11.84 | 13.06 |
|                 | 6H   | 14.75            | 15.10 | 15.73 | 16.08 | 17.32 | 11.01          | 11.35 | 11.99 | 12.34 | 13.57 |
|                 | 8H   | 14.98            | 15.28 | 15.96 | 16.26 | 17.54 | 11.22          | 11.53 | 12.21 | 12.50 | 13.79 |

END OF REPORT