

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: P913933

Luminaire Tested: DFN2DIP-PN3F0-050D070US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913933  
REPORT IS A COMBINATION OF REPORTS P901091 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D070US927-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

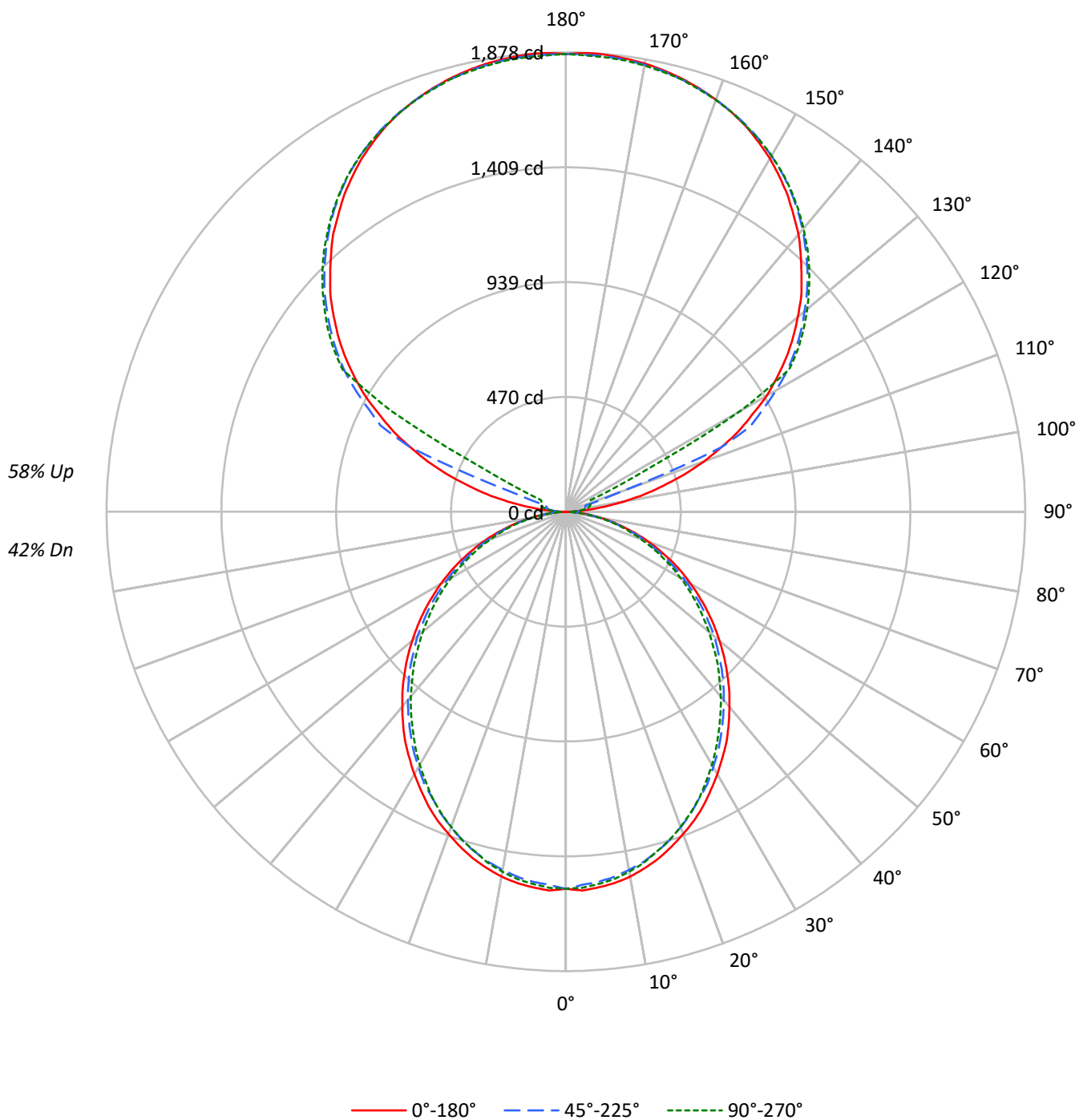
Lumens per Lamp: N/A  
Luminaire Lumens: 9411.1 lumens  
Efficiency: N/A  
Efficacy: 94.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 99.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 88  | 84  | 87 | 84 | 80 | 78 | 69 | 67 | 65 | 55 | 54 | 52 | 43 | 42 | 41 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 64 | 60 | 57 | 53 | 49 | 46 | 44 | 38 | 36 | 34 |
| 3   | 80  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 53 | 49 | 45 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 62  | 54  | 48  | 66 | 57 | 50 | 45 | 47 | 42 | 38 | 38 | 35 | 32 | 30 | 27 | 25 |
| 5   | 67  | 55  | 47  | 41  | 61 | 51 | 44 | 39 | 42 | 37 | 33 | 34 | 30 | 27 | 27 | 24 | 22 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 33 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 22 | 19 |
| 7   | 57  | 45  | 37  | 31  | 52 | 41 | 34 | 29 | 34 | 29 | 25 | 28 | 24 | 21 | 22 | 19 | 17 |
| 8   | 53  | 41  | 33  | 28  | 48 | 37 | 31 | 26 | 31 | 26 | 22 | 26 | 22 | 19 | 20 | 18 | 15 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 26 | 21 | 18 | 22 | 18 | 15 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1802 | 1802 | 1802 |
| 5°  | 1803 | 1775 | 1788 |
| 10° | 1788 | 1750 | 1763 |
| 15° | 1760 | 1720 | 1724 |
| 20° | 1724 | 1679 | 1685 |
| 25° | 1687 | 1630 | 1639 |
| 30° | 1642 | 1584 | 1582 |
| 35° | 1599 | 1530 | 1521 |
| 40° | 1546 | 1475 | 1463 |
| 45° | 1493 | 1421 | 1403 |
| 50° | 1435 | 1363 | 1334 |
| 55° | 1375 | 1297 | 1271 |
| 60° | 1306 | 1218 | 1198 |
| 65° | 1231 | 1137 | 1112 |
| 70° | 1136 | 1037 | 1020 |
| 75° | 1004 | 918  | 933  |
| 80° | 844  | 765  | 770  |
| 85° | 595  | 506  | 502  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1493 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 145.1  | 1.5       |
| 10°-20°   | 408.1  | 4.3       |
| 20°-30°   | 599.8  | 6.4       |
| 30°-40°   | 696.6  | 7.4       |
| 40°-50°   | 695.8  | 7.4       |
| 50°-60°   | 606.7  | 6.4       |
| 60°-70°   | 448.5  | 4.8       |
| 70°-80°   | 253.7  | 2.7       |
| 80°-90°   | 70.3   | 0.7       |
| 90°-100°  | 61.7   | 0.7       |
| 100°-110° | 230.0  | 2.4       |
| 110°-120° | 610.1  | 6.5       |
| 120°-130° | 1011.9 | 10.8      |
| 130°-140° | 1074.9 | 11.4      |
| 140°-150° | 999.0  | 10.6      |
| 150°-160° | 803.2  | 8.5       |
| 160°-170° | 517.5  | 5.5       |
| 170°-180° | 178.1  | 1.9       |
| 0°-30°    | 1153.0 | 12.3      |
| 0°-40°    | 1849.6 | 19.7      |
| 0°-60°    | 3152.1 | 33.5      |
| 0°-90°    | 3924.6 | 41.7      |
| 90°-120°  | 901.9  | 9.6       |
| 90°-150°  | 3987.7 | 42.4      |
| 90°-180°  | 5487.0 | 58.3      |
| 0°-180°   | 9411.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1541 | 1541  | 1541 | 1541  | 1541 |      |
| 5°   | 1541 | 1535  | 1519 | 1531  | 1528 | 146  |
| 15°  | 1467 | 1458  | 1439 | 1445  | 1438 | 413  |
| 25°  | 1328 | 1316  | 1291 | 1294  | 1291 | 611  |
| 35°  | 1146 | 1131  | 1107 | 1098  | 1091 | 715  |
| 45°  | 932  | 922   | 900  | 883   | 877  | 719  |
| 55°  | 706  | 697   | 679  | 661   | 654  | 631  |
| 65°  | 476  | 467   | 452  | 439   | 431  | 470  |
| 75°  | 249  | 246   | 238  | 230   | 233  | 266  |
| 85°  | 61   | 59    | 58   | 53    | 52   | 68   |
| 90°  | 1    | 16    | 27   | 34    | 36   | 9    |
| 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°     | 1541.2 | 1541.2 | 1541.2 | 1541.2 | 1541.2 |
| 2.5°   | 1550.1 | 1542.8 | 1526.5 | 1541.2 | 1538.4 |
| 5°     | 1541.2 | 1535.4 | 1519.0 | 1530.8 | 1528.0 |
| 7.5°   | 1530.8 | 1522.0 | 1505.7 | 1517.7 | 1514.7 |
| 10°    | 1514.7 | 1504.3 | 1486.5 | 1498.3 | 1493.9 |
| 12.5°  | 1492.3 | 1483.5 | 1465.8 | 1473.1 | 1470.1 |
| 15°    | 1467.1 | 1458.3 | 1439.0 | 1445.0 | 1437.6 |
| 17.5°  | 1436.0 | 1427.2 | 1407.9 | 1415.2 | 1407.9 |
| 20°    | 1401.9 | 1393.1 | 1372.4 | 1376.7 | 1370.9 |
| 22.5°  | 1367.9 | 1354.6 | 1335.2 | 1335.2 | 1332.2 |
| 25°    | 1327.9 | 1316.1 | 1290.9 | 1293.7 | 1290.9 |
| 27.5°  | 1283.3 | 1273.0 | 1253.8 | 1249.3 | 1242.0 |
| 30°    | 1239.0 | 1227.1 | 1204.9 | 1200.5 | 1194.5 |
| 32.5°  | 1191.5 | 1182.7 | 1159.0 | 1150.0 | 1144.1 |
| 35°    | 1145.6 | 1130.8 | 1107.1 | 1098.1 | 1090.8 |
| 37.5°  | 1093.7 | 1080.4 | 1056.6 | 1046.2 | 1038.9 |
| 40°    | 1040.5 | 1028.5 | 1004.7 | 991.5  | 985.6  |
| 42.5°  | 988.6  | 976.6  | 953.0  | 938.0  | 929.2  |
| 45°    | 932.2  | 921.9  | 899.5  | 883.4  | 877.3  |
| 47.5°  | 877.3  | 867.0  | 843.3  | 826.9  | 818.1  |
| 50°    | 819.5  | 812.1  | 791.4  | 770.6  | 763.2  |
| 52.5°  | 763.2  | 752.8  | 733.6  | 717.3  | 706.9  |
| 55°    | 705.5  | 696.6  | 678.7  | 661.0  | 653.6  |
| 57.5°  | 647.6  | 640.2  | 620.9  | 603.2  | 597.1  |
| 60°    | 589.8  | 584.0  | 563.2  | 546.8  | 542.5  |
| 62.5°  | 533.5  | 523.2  | 508.3  | 493.5  | 487.6  |
| 65°    | 475.8  | 466.8  | 452.0  | 438.7  | 431.3  |
| 67.5°  | 416.5  | 409.0  | 395.8  | 385.4  | 379.4  |
| 70°    | 361.6  | 355.7  | 342.3  | 331.9  | 326.1  |
| 72.5°  | 305.4  | 299.4  | 292.0  | 281.6  | 277.2  |
| 75°    | 248.9  | 246.1  | 238.5  | 229.7  | 232.7  |
| 77.5°  | 198.6  | 192.6  | 189.6  | 185.2  | 180.9  |
| 80°    | 148.3  | 146.7  | 143.7  | 139.3  | 136.3  |
| 82.5°  | 100.8  | 100.8  | 99.3   | 93.4   | 93.4   |
| 85°    | 60.7   | 59.3   | 57.8   | 53.3   | 51.9   |
| 87.5°  | 26.7   | 23.8   | 20.8   | 16.3   | 14.8   |
| 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 | 8.46             | 9.25  | 9.48  | 10.28 | 11.67 | 8.02           | 8.81  | 9.05  | 9.85  | 11.23 |
|                 | 3H   | 10.11            | 10.82 | 11.14 | 11.86 | 13.26 | 9.63           | 10.34 | 10.66 | 11.38 | 12.78 |
|                 | 4H   | 10.69            | 11.36 | 11.74 | 12.41 | 13.82 | 10.20          | 10.88 | 11.25 | 11.92 | 13.33 |
|                 | 6H   | 11.08            | 11.70 | 12.14 | 12.75 | 14.17 | 10.59          | 11.21 | 11.65 | 12.26 | 13.68 |
|                 | 8H   | 11.18            | 11.77 | 12.24 | 12.83 | 14.25 | 10.69          | 11.28 | 11.75 | 12.34 | 13.76 |
|                 | 12H  | 11.22            | 11.78 | 12.29 | 12.84 | 14.29 | 10.73          | 11.29 | 11.79 | 12.35 | 13.79 |
| 4H              | 2H   | 8.91             | 9.58  | 9.96  | 10.62 | 12.04 | 8.56           | 9.23  | 9.61  | 10.27 | 11.69 |
|                 | 3H   | 10.76            | 11.32 | 11.82 | 12.39 | 13.82 | 10.36          | 10.92 | 11.42 | 11.99 | 13.42 |
|                 | 4H   | 11.47            | 11.98 | 12.54 | 13.05 | 14.49 | 11.05          | 11.57 | 12.12 | 12.63 | 14.08 |
|                 | 6H   | 11.97            | 12.41 | 13.05 | 13.50 | 14.94 | 11.55          | 11.99 | 12.63 | 13.08 | 14.52 |
|                 | 8H   | 12.12            | 12.53 | 13.20 | 13.61 | 15.07 | 11.69          | 12.10 | 12.77 | 13.18 | 14.64 |
|                 | 12H  | 12.18            | 12.56 | 13.28 | 13.65 | 15.11 | 11.75          | 12.12 | 12.84 | 13.21 | 14.68 |
| 8H              | 4H   | 11.65            | 12.07 | 12.73 | 13.15 | 14.60 | 11.28          | 11.70 | 12.36 | 12.78 | 14.23 |
|                 | 6H   | 12.28            | 12.62 | 13.38 | 13.74 | 15.19 | 11.90          | 12.24 | 13.00 | 13.36 | 14.82 |
|                 | 8H   | 12.49            | 12.79 | 13.60 | 13.89 | 15.37 | 12.11          | 12.41 | 13.22 | 13.51 | 14.98 |
|                 | 12H  | 12.62            | 12.88 | 13.73 | 13.98 | 15.49 | 12.22          | 12.48 | 13.33 | 13.58 | 15.09 |
| 12H             | 4H   | 11.64            | 12.01 | 12.73 | 13.10 | 14.56 | 11.27          | 11.65 | 12.37 | 12.74 | 14.20 |
|                 | 6H   | 12.30            | 12.60 | 13.41 | 13.71 | 15.18 | 11.94          | 12.24 | 13.05 | 13.34 | 14.81 |
|                 | 8H   | 12.54            | 12.80 | 13.65 | 13.90 | 15.41 | 12.17          | 12.43 | 13.28 | 13.53 | 15.04 |

END OF REPORT