

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: P920061

Luminaire Tested: DFN2DIP-SQ3F0-060D060US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920061  
REPORT IS A COMBINATION OF REPORTS P901421 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-060D060US935-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

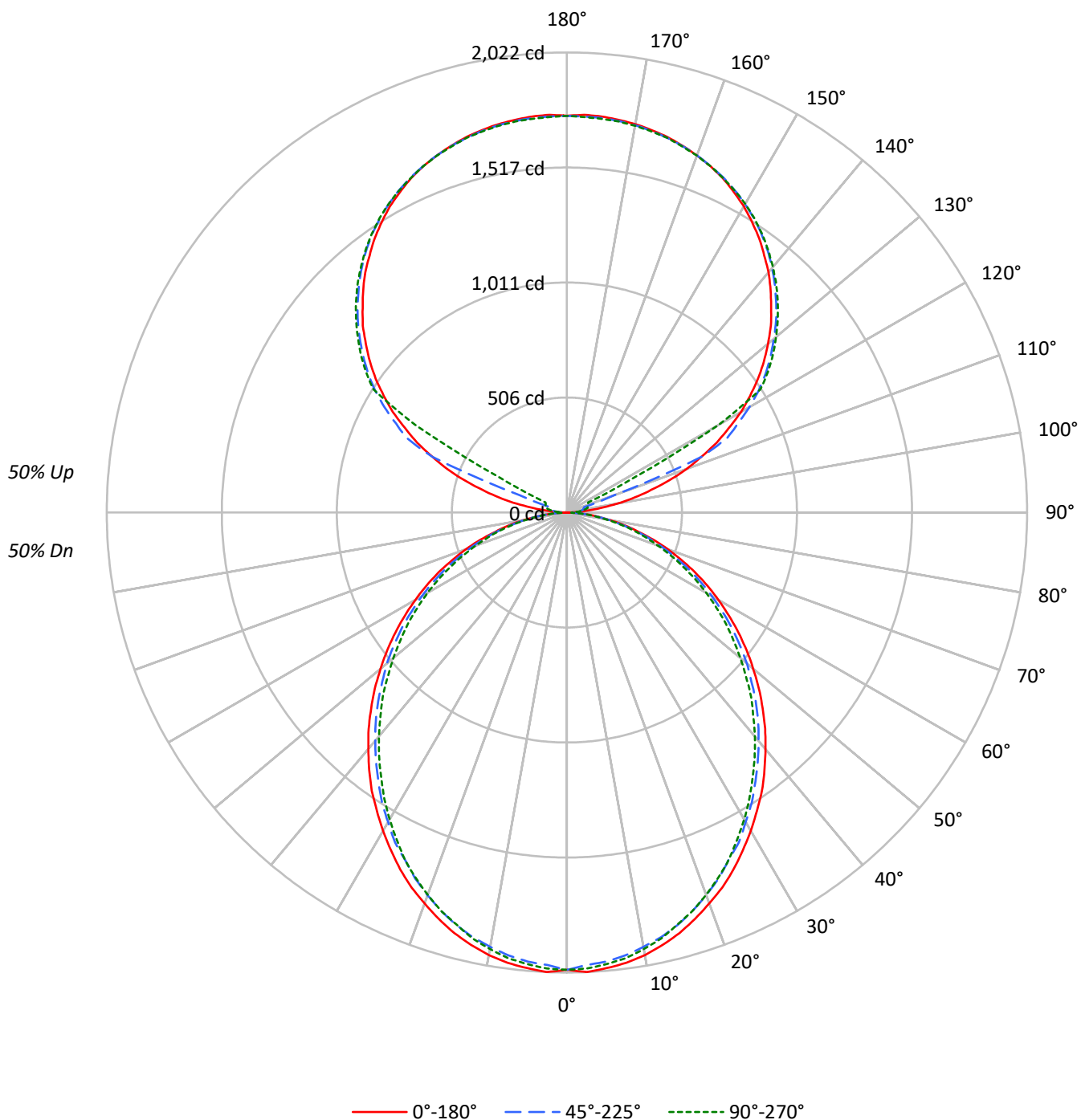
Lumens per Lamp: N/A  
Luminaire Lumens: 10228.6 lumens  
Efficiency: N/A  
Efficacy: 103.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 98.5  
Input Voltage (V): 120  
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

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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 |    |    |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 | 56 | 56 | 56 |
| 1   | 98  | 93  | 90  | 86  | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 | 47 | 47 | 42 |
| 2   | 89  | 82  | 75  | 70  | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 | 40 | 40 | 35 |
| 3   | 81  | 72  | 64  | 59  | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 | 34 | 34 | 30 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 | 29 | 29 | 26 |
| 5   | 68  | 57  | 48  | 42  | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 | 26 | 26 | 22 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 | 23 | 23 | 20 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 | 20 | 20 | 17 |
| 8   | 54  | 42  | 34  | 29  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 | 18 | 18 | 16 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 | 16 | 16 | 14 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 | 15 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2303 | 2303 | 2303 |
| 5°  | 2305 | 2270 | 2286 |
| 10° | 2285 | 2237 | 2254 |
| 15° | 2250 | 2199 | 2205 |
| 20° | 2203 | 2146 | 2155 |
| 25° | 2157 | 2084 | 2097 |
| 30° | 2099 | 2025 | 2023 |
| 35° | 2043 | 1956 | 1945 |
| 40° | 1975 | 1887 | 1871 |
| 45° | 1908 | 1817 | 1796 |
| 50° | 1834 | 1744 | 1708 |
| 55° | 1756 | 1659 | 1627 |
| 60° | 1668 | 1559 | 1535 |
| 65° | 1572 | 1455 | 1425 |
| 70° | 1450 | 1327 | 1308 |
| 75° | 1281 | 1175 | 1198 |
| 80° | 1077 | 980  | 990  |
| 85° | 757  | 649  | 648  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1908 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 189.2   | 1.8       |
| 10°-20°   | 532.3   | 5.2       |
| 20°-30°   | 782.3   | 7.6       |
| 30°-40°   | 908.6   | 8.9       |
| 40°-50°   | 907.5   | 8.9       |
| 50°-60°   | 791.3   | 7.7       |
| 60°-70°   | 584.9   | 5.7       |
| 70°-80°   | 330.9   | 3.2       |
| 80°-90°   | 90.4    | 0.9       |
| 90°-100°  | 57.5    | 0.6       |
| 100°-110° | 214.3   | 2.1       |
| 110°-120° | 568.4   | 5.6       |
| 120°-130° | 942.7   | 9.2       |
| 130°-140° | 1001.4  | 9.8       |
| 140°-150° | 930.7   | 9.1       |
| 150°-160° | 748.2   | 7.3       |
| 160°-170° | 482.1   | 4.7       |
| 170°-180° | 165.9   | 1.6       |
| 0°-30°    | 1503.8  | 14.7      |
| 0°-40°    | 2412.4  | 23.6      |
| 0°-60°    | 4111.1  | 40.2      |
| 0°-90°    | 5117.4  | 50.0      |
| 90°-120°  | 840.2   | 8.2       |
| 90°-150°  | 3714.9  | 36.3      |
| 90°-180°  | 5111.0  | 50.0      |
| 0°-180°   | 10228.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2010 | 2010  | 2010 | 2010  | 2010 |      |
| 5°   | 2010 | 2002  | 1981 | 1997  | 1993 | 191  |
| 15°  | 1914 | 1902  | 1877 | 1885  | 1875 | 539  |
| 25°  | 1732 | 1716  | 1684 | 1687  | 1684 | 797  |
| 35°  | 1494 | 1475  | 1444 | 1432  | 1422 | 933  |
| 45°  | 1216 | 1202  | 1173 | 1152  | 1144 | 938  |
| 55°  | 920  | 908   | 885  | 862   | 852  | 823  |
| 65°  | 620  | 609   | 590  | 572   | 562  | 614  |
| 75°  | 325  | 321   | 311  | 300   | 304  | 347  |
| 85°  | 79   | 77    | 75   | 70    | 68   | 88   |
| 90°  | 1    | 15    | 25   | 32    | 34   | 9    |
| 95°  | 82   | 40    | 49   | 56    | 54   | 97   |
| 105° | 384  | 421   | 77   | 91    | 96   | 410  |
| 115° | 725  | 747   | 778  | 194   | 104  | 714  |
| 125° | 1026 | 1042  | 1066 | 1075  | 1079 | 915  |
| 135° | 1269 | 1289  | 1301 | 1313  | 1311 | 980  |
| 145° | 1472 | 1471  | 1492 | 1501  | 1495 | 921  |
| 155° | 1621 | 1610  | 1625 | 1632  | 1622 | 747  |
| 165° | 1708 | 1701  | 1704 | 1713  | 1704 | 483  |
| 175° | 1747 | 1738  | 1741 | 1750  | 1737 | 166  |
| 180° | 1743 | 1743  | 1743 | 1743  | 1743 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2010.1 | 2010.1 | 2010.1 | 2010.1 | 2010.1 |
| 2.5°   | 2021.8 | 2012.2 | 1990.8 | 2010.1 | 2006.4 |
| 5°     | 2010.1 | 2002.5 | 1981.2 | 1996.6 | 1992.9 |
| 7.5°   | 1996.6 | 1985.1 | 1963.8 | 1979.3 | 1975.5 |
| 10°    | 1975.5 | 1962.0 | 1938.7 | 1954.1 | 1948.4 |
| 12.5°  | 1946.4 | 1934.8 | 1911.7 | 1921.3 | 1917.4 |
| 15°    | 1913.5 | 1902.0 | 1876.8 | 1884.6 | 1875.0 |
| 17.5°  | 1872.9 | 1861.5 | 1836.3 | 1845.8 | 1836.3 |
| 20°    | 1828.4 | 1817.0 | 1789.8 | 1795.6 | 1788.0 |
| 22.5°  | 1784.2 | 1766.7 | 1741.5 | 1741.5 | 1737.6 |
| 25°    | 1731.8 | 1716.5 | 1683.6 | 1687.3 | 1683.6 |
| 27.5°  | 1673.8 | 1660.3 | 1635.2 | 1629.5 | 1619.9 |
| 30°    | 1616.0 | 1600.3 | 1571.5 | 1565.7 | 1557.9 |
| 32.5°  | 1554.0 | 1542.6 | 1511.6 | 1499.9 | 1492.1 |
| 35°    | 1494.2 | 1474.9 | 1443.9 | 1432.2 | 1422.5 |
| 37.5°  | 1426.5 | 1409.0 | 1378.1 | 1364.5 | 1354.9 |
| 40°    | 1356.9 | 1341.3 | 1310.4 | 1293.2 | 1285.4 |
| 42.5°  | 1289.3 | 1273.7 | 1242.9 | 1223.5 | 1211.9 |
| 45°    | 1215.9 | 1202.3 | 1173.2 | 1152.1 | 1144.3 |
| 47.5°  | 1144.3 | 1130.7 | 1099.8 | 1078.5 | 1066.9 |
| 50°    | 1068.8 | 1059.2 | 1032.2 | 1005.0 | 995.4  |
| 52.5°  | 995.4  | 981.9  | 956.8  | 935.6  | 922.0  |
| 55°    | 920.1  | 908.4  | 885.3  | 862.1  | 852.5  |
| 57.5°  | 844.7  | 835.1  | 809.9  | 786.7  | 778.9  |
| 60°    | 769.2  | 761.6  | 734.6  | 713.3  | 707.5  |
| 62.5°  | 695.8  | 682.3  | 663.0  | 643.7  | 635.9  |
| 65°    | 620.5  | 608.9  | 589.6  | 572.1  | 562.5  |
| 67.5°  | 543.2  | 533.4  | 516.2  | 502.7  | 494.8  |
| 70°    | 471.7  | 463.9  | 446.4  | 432.9  | 425.3  |
| 72.5°  | 398.2  | 390.5  | 380.8  | 367.3  | 361.5  |
| 75°    | 324.6  | 321.0  | 311.1  | 299.6  | 303.5  |
| 77.5°  | 259.0  | 251.2  | 247.3  | 241.6  | 235.8  |
| 80°    | 193.4  | 191.3  | 187.4  | 181.7  | 177.8  |
| 82.5°  | 131.5  | 131.5  | 129.6  | 121.8  | 121.8  |
| 85°    | 79.1   | 77.3   | 75.4   | 69.5   | 67.7   |
| 87.5°  | 34.9   | 31.0   | 27.0   | 21.4   | 19.3   |
| 90°    | 1.2    | 15.2   | 25.1   | 31.6   | 34.0   |
| 92.5°  | 31.6   | 26.5   | 30.2   | 32.8   | 34.0   |
| 95°    | 82.0   | 40.3   | 49.2   | 55.6   | 54.2   |
| 97.5°  | 147.6  | 44.2   | 64.2   | 68.2   | 69.4   |
| 100°   | 223.3  | 50.5   | 71.9   | 82.0   | 84.5   |
| 102.5° | 306.5  | 304.1  | 74.5   | 88.3   | 92.1   |
| 105°   | 383.5  | 421.4  | 77.0   | 90.7   | 95.9   |
| 107.5° | 473.1  | 504.5  | 79.6   | 93.3   | 98.4   |
| 110°   | 559.0  | 585.3  | 220.8  | 94.7   | 99.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 639.6  | 662.3  | 640.8  | 97.0   | 101.0  |
| 115°   | 725.4  | 746.8  | 778.4  | 194.3  | 103.5  |
| 117.5° | 799.8  | 825.0  | 846.5  | 666.1  | 335.5  |
| 120°   | 883.1  | 902.0  | 924.8  | 939.9  | 769.6  |
| 122.5° | 953.6  | 973.9  | 999.2  | 1006.7 | 1008.1 |
| 125°   | 1025.6 | 1042.1 | 1066.0 | 1074.9 | 1078.6 |
| 127.5° | 1091.2 | 1108.9 | 1127.9 | 1140.5 | 1141.7 |
| 130°   | 1153.0 | 1173.3 | 1187.1 | 1201.0 | 1199.8 |
| 132.5° | 1216.2 | 1232.6 | 1246.4 | 1257.7 | 1256.5 |
| 135°   | 1269.2 | 1289.4 | 1300.6 | 1313.4 | 1310.8 |
| 137.5° | 1324.6 | 1339.7 | 1352.5 | 1365.0 | 1361.3 |
| 140°   | 1378.8 | 1389.0 | 1402.8 | 1414.2 | 1407.9 |
| 142.5° | 1424.3 | 1433.2 | 1449.6 | 1459.6 | 1453.3 |
| 145°   | 1472.3 | 1470.9 | 1492.4 | 1501.2 | 1495.0 |
| 147.5° | 1513.8 | 1510.0 | 1531.5 | 1537.7 | 1532.8 |
| 150°   | 1554.3 | 1545.4 | 1565.6 | 1573.1 | 1566.8 |
| 152.5° | 1588.3 | 1578.2 | 1597.1 | 1604.7 | 1595.9 |
| 155°   | 1621.1 | 1609.8 | 1625.0 | 1632.5 | 1622.4 |
| 157.5° | 1647.6 | 1637.5 | 1648.9 | 1657.8 | 1647.6 |
| 160°   | 1670.3 | 1662.7 | 1670.3 | 1677.8 | 1669.0 |
| 162.5° | 1690.4 | 1682.9 | 1689.2 | 1698.1 | 1686.7 |
| 165°   | 1708.1 | 1700.6 | 1704.3 | 1713.2 | 1704.3 |
| 167.5° | 1722.0 | 1714.4 | 1718.3 | 1727.2 | 1715.7 |
| 170°   | 1733.4 | 1725.8 | 1728.4 | 1737.1 | 1725.8 |
| 172.5° | 1740.9 | 1733.4 | 1735.9 | 1744.8 | 1733.4 |
| 175°   | 1747.2 | 1738.4 | 1740.9 | 1749.7 | 1737.1 |
| 177.5° | 1749.7 | 1740.9 | 1742.2 | 1751.1 | 1739.7 |
| 180°   | 1743.4 | 1743.4 | 1743.4 | 1743.4 | 1743.4 |

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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 | 10.14            | 11.00 | 11.10 | 11.97 | 13.24 | 9.70           | 10.56 | 10.65 | 11.53 | 12.80 |
|                 | 3H   | 11.80            | 12.57 | 12.76 | 13.55 | 14.84 | 11.31          | 12.08 | 12.27 | 13.06 | 14.35 |
|                 | 4H   | 12.38            | 13.11 | 13.36 | 14.10 | 15.40 | 11.89          | 12.62 | 12.87 | 13.60 | 14.90 |
|                 | 6H   | 12.78            | 13.45 | 13.77 | 14.44 | 15.76 | 12.28          | 12.95 | 13.27 | 13.94 | 15.25 |
|                 | 8H   | 12.88            | 13.52 | 13.88 | 14.53 | 15.84 | 12.38          | 13.02 | 13.38 | 14.03 | 15.34 |
|                 | 12H  | 12.93            | 13.54 | 13.93 | 14.54 | 15.87 | 12.42          | 13.03 | 13.42 | 14.03 | 15.36 |
| 4H              | 2H   | 10.60            | 11.33 | 11.58 | 12.31 | 13.62 | 10.24          | 10.97 | 11.23 | 11.96 | 13.26 |
|                 | 3H   | 12.46            | 13.07 | 13.45 | 14.08 | 15.40 | 12.05          | 12.66 | 13.05 | 13.67 | 14.99 |
|                 | 4H   | 13.17            | 13.73 | 14.17 | 14.73 | 16.07 | 12.74          | 13.30 | 13.75 | 14.31 | 15.65 |
|                 | 6H   | 13.68            | 14.16 | 14.70 | 15.19 | 16.53 | 13.25          | 13.73 | 14.26 | 14.76 | 16.09 |
|                 | 8H   | 13.83            | 14.28 | 14.84 | 15.30 | 16.65 | 13.39          | 13.84 | 14.41 | 14.86 | 16.21 |
|                 | 12H  | 13.90            | 14.30 | 14.93 | 15.34 | 16.70 | 13.45          | 13.85 | 14.48 | 14.89 | 16.25 |
| 8H              | 4H   | 13.36            | 13.81 | 14.38 | 14.83 | 16.18 | 12.98          | 13.43 | 14.00 | 14.46 | 15.81 |
|                 | 6H   | 13.99            | 14.36 | 15.03 | 15.42 | 16.77 | 13.60          | 13.97 | 14.64 | 15.04 | 16.39 |
|                 | 8H   | 14.20            | 14.53 | 15.25 | 15.58 | 16.95 | 13.81          | 14.14 | 14.86 | 15.19 | 16.56 |
|                 | 12H  | 14.33            | 14.62 | 15.39 | 15.66 | 17.08 | 13.92          | 14.21 | 14.97 | 15.25 | 16.66 |
| 12H             | 4H   | 13.35            | 13.75 | 14.38 | 14.79 | 16.15 | 12.98          | 13.38 | 14.01 | 14.42 | 15.78 |
|                 | 6H   | 14.01            | 14.34 | 15.06 | 15.39 | 16.76 | 13.64          | 13.97 | 14.69 | 15.02 | 16.39 |
|                 | 8H   | 14.25            | 14.54 | 15.31 | 15.59 | 17.00 | 13.87          | 14.16 | 14.92 | 15.20 | 16.61 |

END OF REPORT