

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: P919559

Luminaire Tested: DFN2DIP-PN4F0-050D060US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919559  
REPORT IS A COMBINATION OF REPORTS P901168 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-050D060US935-RLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

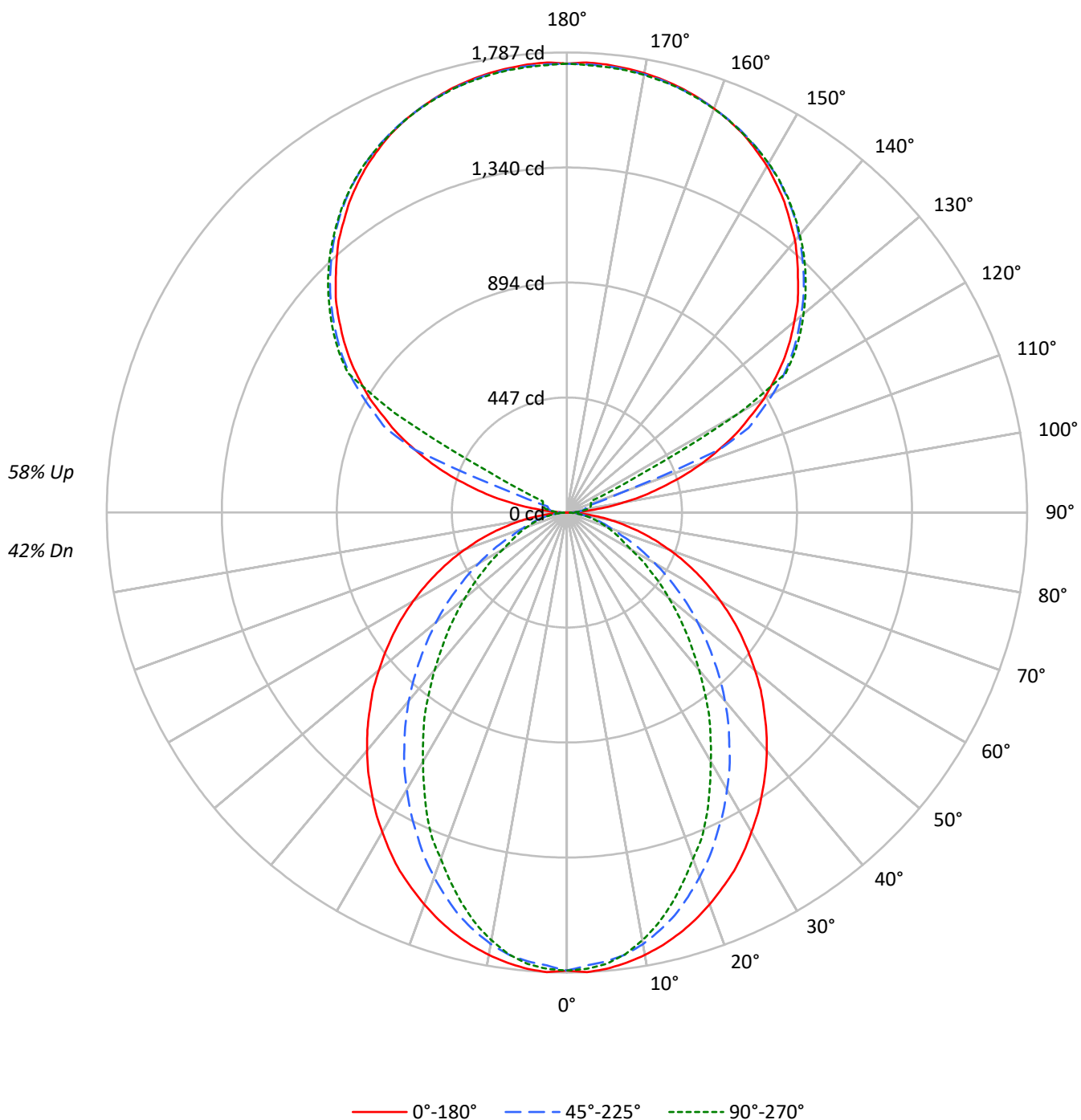
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8773.6 lumens  
Efficiency: N/A  
Efficacy: 98.4 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): 89.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 43 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 46 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 35 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1299 | 1299 | 1299 |
| 5°  | 1301 | 1278 | 1287 |
| 10° | 1288 | 1253 | 1245 |
| 15° | 1270 | 1212 | 1180 |
| 20° | 1247 | 1155 | 1101 |
| 25° | 1223 | 1091 | 1025 |
| 30° | 1190 | 1026 | 928  |
| 35° | 1159 | 955  | 842  |
| 40° | 1127 | 883  | 744  |
| 45° | 1089 | 802  | 656  |
| 50° | 1051 | 720  | 569  |
| 55° | 1010 | 633  | 486  |
| 60° | 964  | 541  | 400  |
| 65° | 910  | 449  | 360  |
| 70° | 845  | 362  | 326  |
| 75° | 763  | 319  | 298  |
| 80° | 645  | 268  | 259  |
| 85° | 449  | 180  | 196  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1089 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 166.8  | 1.9       |
| 10°-20°   | 457.8  | 5.2       |
| 20°-30°   | 642.7  | 7.3       |
| 30°-40°   | 700.6  | 8.0       |
| 40°-50°   | 643.9  | 7.3       |
| 50°-60°   | 505.7  | 5.8       |
| 60°-70°   | 329.2  | 3.8       |
| 70°-80°   | 169.5  | 1.9       |
| 80°-90°   | 46.3   | 0.5       |
| 90°-100°  | 57.5   | 0.7       |
| 100°-110° | 214.3  | 2.4       |
| 110°-120° | 568.4  | 6.5       |
| 120°-130° | 942.7  | 10.7      |
| 130°-140° | 1001.4 | 11.4      |
| 140°-150° | 930.7  | 10.6      |
| 150°-160° | 748.2  | 8.5       |
| 160°-170° | 482.1  | 5.5       |
| 170°-180° | 165.9  | 1.9       |
| 0°-30°    | 1267.2 | 14.4      |
| 0°-40°    | 1967.8 | 22.4      |
| 0°-60°    | 3117.4 | 35.5      |
| 0°-90°    | 3662.3 | 41.7      |
| 90°-120°  | 840.2  | 9.6       |
| 90°-150°  | 3714.9 | 42.3      |
| 90°-180°  | 5111.0 | 58.3      |
| 0°-180°   | 8773.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1779 | 1779  | 1779 | 1779  | 1779 |      |
| 5°   | 1779 | 1771  | 1750 | 1765  | 1760 | 169  |
| 15°  | 1692 | 1675  | 1620 | 1589  | 1573 | 477  |
| 25°  | 1536 | 1484  | 1378 | 1312  | 1288 | 706  |
| 35°  | 1324 | 1242  | 1100 | 998   | 963  | 828  |
| 45°  | 1082 | 974   | 805  | 691   | 652  | 836  |
| 55°  | 823  | 697   | 523  | 427   | 396  | 735  |
| 65°  | 556  | 425   | 280  | 226   | 221  | 551  |
| 75°  | 296  | 184   | 129  | 118   | 116  | 313  |
| 85°  | 69   | 35    | 31   | 31    | 31   | 79   |
| 90°  | 1    | 15    | 25   | 32    | 34   | 8    |
| 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°     | 1779.3 | 1779.3 | 1779.3 | 1779.3 | 1779.3 |
| 2.5°   | 1787.3 | 1779.3 | 1761.5 | 1777.7 | 1774.4 |
| 5°     | 1779.3 | 1771.2 | 1750.2 | 1764.7 | 1760.0 |
| 7.5°   | 1764.7 | 1755.1 | 1732.6 | 1739.0 | 1730.9 |
| 10°    | 1745.4 | 1734.1 | 1702.0 | 1697.1 | 1687.5 |
| 12.5°  | 1721.3 | 1706.8 | 1663.3 | 1653.7 | 1635.9 |
| 15°    | 1692.3 | 1674.6 | 1619.9 | 1589.3 | 1573.2 |
| 17.5°  | 1658.5 | 1632.7 | 1565.0 | 1529.6 | 1503.8 |
| 20°    | 1619.9 | 1587.6 | 1507.1 | 1467.0 | 1431.4 |
| 22.5°  | 1578.0 | 1540.9 | 1447.5 | 1392.8 | 1368.7 |
| 25°    | 1536.1 | 1484.5 | 1378.3 | 1312.3 | 1288.1 |
| 27.5°  | 1486.3 | 1431.4 | 1313.9 | 1238.2 | 1201.2 |
| 30°    | 1433.1 | 1371.8 | 1243.0 | 1161.0 | 1117.4 |
| 32.5°  | 1381.6 | 1307.4 | 1175.5 | 1078.8 | 1038.5 |
| 35°    | 1323.6 | 1241.5 | 1099.8 | 998.3  | 962.9  |
| 37.5°  | 1267.2 | 1178.6 | 1029.0 | 917.7  | 877.6  |
| 40°    | 1207.6 | 1111.1 | 954.8  | 840.5  | 798.7  |
| 42.5°  | 1146.5 | 1043.4 | 880.8  | 761.6  | 721.4  |
| 45°    | 1082.1 | 974.1  | 805.1  | 690.7  | 652.0  |
| 47.5°  | 1020.9 | 906.6  | 732.7  | 618.3  | 582.9  |
| 50°    | 953.3  | 839.0  | 661.8  | 550.6  | 516.9  |
| 52.5°  | 887.2  | 766.4  | 594.2  | 487.9  | 457.4  |
| 55°    | 822.8  | 697.1  | 523.2  | 426.7  | 396.1  |
| 57.5°  | 756.8  | 628.0  | 460.5  | 370.4  | 344.6  |
| 60°    | 689.1  | 560.3  | 394.4  | 312.5  | 286.6  |
| 62.5°  | 623.2  | 494.4  | 338.1  | 260.9  | 248.1  |
| 65°    | 555.5  | 425.1  | 280.2  | 225.5  | 220.6  |
| 67.5°  | 491.1  | 360.7  | 225.5  | 198.0  | 193.2  |
| 70°    | 423.5  | 297.9  | 186.8  | 170.6  | 164.2  |
| 72.5°  | 359.1  | 239.9  | 156.2  | 143.4  | 140.1  |
| 75°    | 296.3  | 183.5  | 128.8  | 117.5  | 116.0  |
| 77.5°  | 233.5  | 130.4  | 101.5  | 95.0   | 91.7   |
| 80°    | 175.5  | 93.4   | 77.2   | 70.9   | 70.9   |
| 82.5°  | 122.3  | 62.9   | 53.1   | 49.9   | 49.9   |
| 85°    | 69.2   | 35.4   | 30.6   | 30.6   | 30.6   |
| 87.5°  | 25.8   | 12.8   | 12.8   | 11.3   | 11.3   |
| 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 |



TEST NUMBER: P919559

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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 | 7.24             | 8.01  | 8.27  | 9.04  | 10.43 | 3.21           | 3.97 | 4.24 | 5.01 | 6.39 |
|                 | 3H   | 8.92             | 9.60  | 9.96  | 10.64 | 12.05 | 4.39           | 5.07 | 5.43 | 6.12 | 7.52 |
|                 | 4H   | 9.52             | 10.17 | 10.58 | 11.22 | 12.63 | 4.84           | 5.49 | 5.89 | 6.53 | 7.95 |
|                 | 6H   | 9.94             | 10.54 | 11.01 | 11.59 | 13.02 | 5.16           | 5.75 | 6.22 | 6.80 | 8.23 |
|                 | 8H   | 10.07            | 10.64 | 11.14 | 11.70 | 13.12 | 5.25           | 5.81 | 6.31 | 6.88 | 8.30 |
|                 | 12H  | 10.13            | 10.67 | 11.20 | 11.73 | 13.17 | 5.29           | 5.83 | 6.36 | 6.89 | 8.33 |
| 4H              | 2H   | 7.25             | 7.90  | 8.31  | 8.94  | 10.36 | 3.79           | 4.44 | 4.85 | 5.49 | 6.90 |
|                 | 3H   | 9.08             | 9.62  | 10.14 | 10.69 | 12.12 | 5.14           | 5.68 | 6.21 | 6.75 | 8.18 |
|                 | 4H   | 9.77             | 10.26 | 10.84 | 11.33 | 12.78 | 5.69           | 6.18 | 6.76 | 7.24 | 8.69 |
|                 | 6H   | 10.28            | 10.71 | 11.37 | 11.79 | 13.24 | 6.10           | 6.53 | 7.18 | 7.61 | 9.06 |
|                 | 8H   | 10.46            | 10.86 | 11.54 | 11.93 | 13.39 | 6.23           | 6.63 | 7.31 | 7.71 | 9.16 |
|                 | 12H  | 10.55            | 10.91 | 11.65 | 12.00 | 13.47 | 6.29           | 6.65 | 7.39 | 7.74 | 9.21 |
| 8H              | 4H   | 9.73             | 10.13 | 10.81 | 11.21 | 12.67 | 5.96           | 6.36 | 7.04 | 7.44 | 8.90 |
|                 | 6H   | 10.30            | 10.63 | 11.40 | 11.75 | 13.20 | 6.48           | 6.81 | 7.58 | 7.93 | 9.38 |
|                 | 8H   | 10.52            | 10.80 | 11.63 | 11.91 | 13.38 | 6.67           | 6.96 | 7.78 | 8.06 | 9.54 |
|                 | 12H  | 10.66            | 10.91 | 11.77 | 12.01 | 13.52 | 6.79           | 7.04 | 7.90 | 8.14 | 9.65 |
| 12H             | 4H   | 9.68             | 10.04 | 10.78 | 11.13 | 12.60 | 5.97           | 6.32 | 7.06 | 7.42 | 8.88 |
|                 | 6H   | 10.27            | 10.56 | 11.39 | 11.66 | 13.14 | 6.53           | 6.82 | 7.64 | 7.92 | 9.40 |
|                 | 8H   | 10.49            | 10.75 | 11.61 | 11.85 | 13.36 | 6.74           | 6.99 | 7.85 | 8.09 | 9.60 |

END OF REPORT