

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: P903622

Luminaire Tested: DFN2DIP-SQ3F0-040D060US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903622  
REPORT IS A COMBINATION OF REPORTS P899898 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D060US830-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

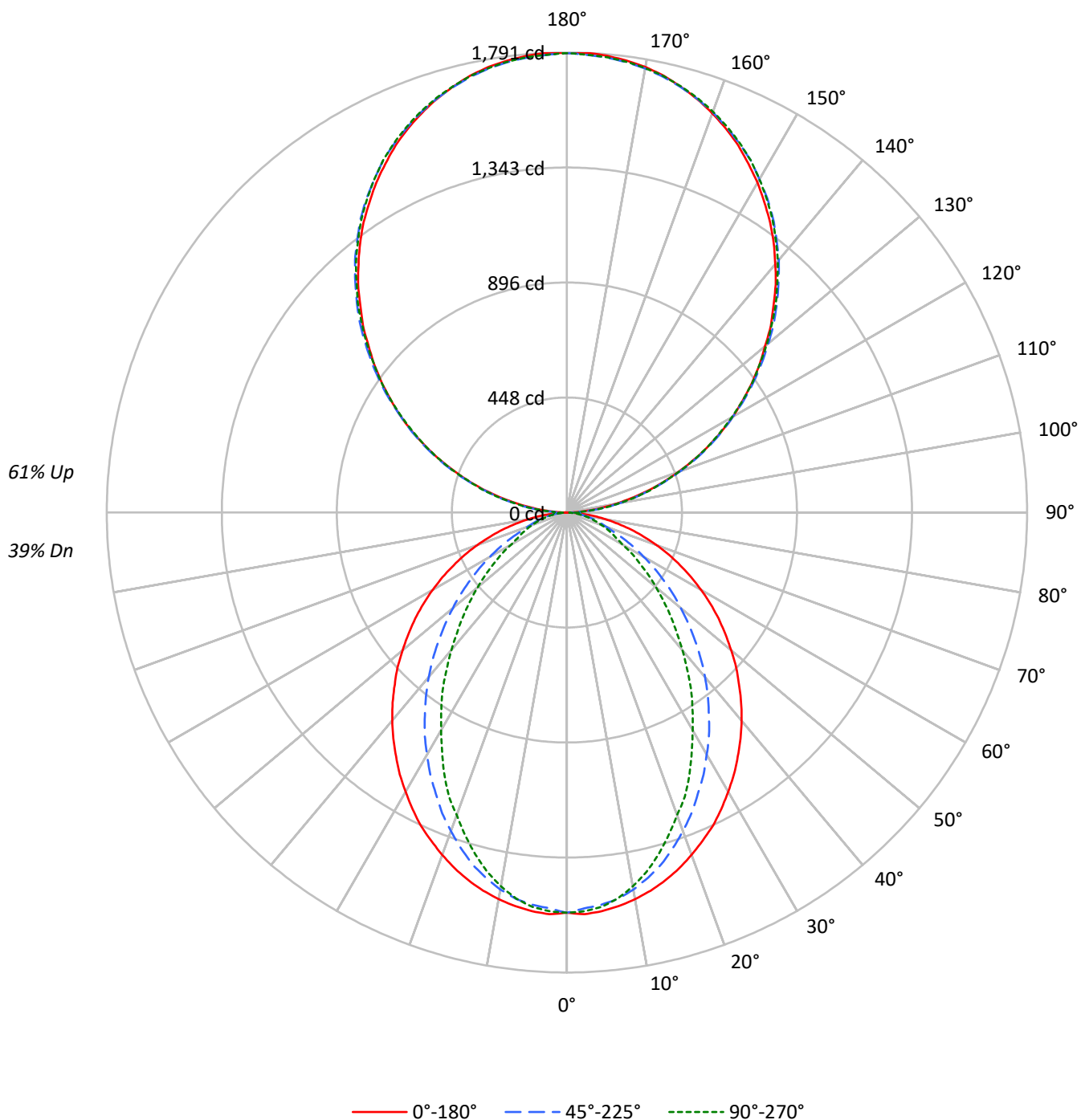
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8209.5 lumens  
Efficiency: N/A  
Efficacy: 106.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 77.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ3F0-040D060US830-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P903622

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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 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 92  | 88  | 85  | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 40 | 40 |
| 2   | 87  | 80  | 75  | 70  | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 66 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 |
| 5   | 67  | 56  | 48  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 24 | 22 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 33 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 22 | 20 | 18 |
| 8   | 53  | 41  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1785 | 1785 | 1785 |
| 5°  | 1787 | 1756 | 1768 |
| 10° | 1768 | 1720 | 1710 |
| 15° | 1743 | 1662 | 1620 |
| 20° | 1709 | 1583 | 1511 |
| 25° | 1675 | 1494 | 1405 |
| 30° | 1630 | 1403 | 1271 |
| 35° | 1585 | 1305 | 1153 |
| 40° | 1540 | 1204 | 1018 |
| 45° | 1487 | 1092 | 896  |
| 50° | 1432 | 979  | 777  |
| 55° | 1375 | 859  | 662  |
| 60° | 1309 | 733  | 545  |
| 65° | 1233 | 605  | 489  |
| 70° | 1140 | 486  | 442  |
| 75° | 1024 | 426  | 401  |
| 80° | 855  | 354  | 346  |
| 85° | 580  | 231  | 257  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1798 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.0  | 1.8       |
| 10°-20°   | 400.9  | 4.9       |
| 20°-30°   | 562.8  | 6.9       |
| 30°-40°   | 613.5  | 7.5       |
| 40°-50°   | 563.9  | 6.9       |
| 50°-60°   | 442.9  | 5.4       |
| 60°-70°   | 288.3  | 3.5       |
| 70°-80°   | 148.4  | 1.8       |
| 80°-90°   | 43.0   | 0.5       |
| 90°-100°  | 110.7  | 1.3       |
| 100°-110° | 351.6  | 4.3       |
| 110°-120° | 601.8  | 7.3       |
| 120°-130° | 791.4  | 9.6       |
| 130°-140° | 888.4  | 10.8      |
| 140°-150° | 871.1  | 10.6      |
| 150°-160° | 730.8  | 8.9       |
| 160°-170° | 484.6  | 5.9       |
| 170°-180° | 169.4  | 2.1       |
| 0°-30°    | 1109.8 | 13.5      |
| 0°-40°    | 1723.3 | 21.0      |
| 0°-60°    | 2730.1 | 33.3      |
| 0°-90°    | 3209.7 | 39.1      |
| 90°-120°  | 1064.1 | 13.0      |
| 90°-150°  | 3615.0 | 44.0      |
| 90°-180°  | 5000.0 | 60.9      |
| 0°-180°   | 8209.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1558 | 1558  | 1558 | 1558  | 1558 |      |
| 5°   | 1558 | 1551  | 1533 | 1546  | 1541 | 148  |
| 15°  | 1482 | 1466  | 1419 | 1392  | 1378 | 418  |
| 25°  | 1345 | 1300  | 1207 | 1149  | 1128 | 619  |
| 35°  | 1159 | 1087  | 963  | 874   | 843  | 726  |
| 45°  | 948  | 853   | 705  | 605   | 571  | 732  |
| 55°  | 721  | 611   | 458  | 374   | 347  | 644  |
| 65°  | 486  | 372   | 245  | 198   | 193  | 482  |
| 75°  | 259  | 161   | 113  | 103   | 102  | 274  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 2    | 19    | 53   | 50    | 51   | 8    |
| 95°  | 79   | 94    | 96   | 96    | 94   | 88   |
| 105° | 325  | 329   | 332  | 335   | 335  | 343  |
| 115° | 604  | 613   | 610  | 608   | 604  | 597  |
| 125° | 878  | 892   | 888  | 883   | 881  | 785  |
| 135° | 1136 | 1153  | 1156 | 1154  | 1150 | 878  |
| 145° | 1379 | 1390  | 1399 | 1400  | 1394 | 862  |
| 155° | 1577 | 1582  | 1586 | 1594  | 1589 | 726  |
| 165° | 1716 | 1714  | 1714 | 1725  | 1717 | 484  |
| 175° | 1785 | 1781  | 1778 | 1789  | 1779 | 170  |
| 180° | 1789 | 1789  | 1789 | 1789  | 1789 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1558.2 | 1558.2 | 1558.2 | 1558.2 | 1558.2 |
| 2.5°   | 1565.3 | 1558.2 | 1542.7 | 1556.9 | 1554.0 |
| 5°     | 1558.2 | 1551.1 | 1532.8 | 1545.5 | 1541.3 |
| 7.5°   | 1545.5 | 1537.1 | 1517.4 | 1522.9 | 1515.9 |
| 10°    | 1528.6 | 1518.7 | 1490.5 | 1486.2 | 1477.9 |
| 12.5°  | 1507.5 | 1494.8 | 1456.6 | 1448.2 | 1432.7 |
| 15°    | 1482.1 | 1466.5 | 1418.6 | 1391.9 | 1377.8 |
| 17.5°  | 1452.5 | 1429.8 | 1370.6 | 1339.6 | 1317.0 |
| 20°    | 1418.6 | 1390.3 | 1319.8 | 1284.7 | 1253.6 |
| 22.5°  | 1382.0 | 1349.5 | 1267.6 | 1219.7 | 1198.7 |
| 25°    | 1345.3 | 1300.1 | 1207.0 | 1149.3 | 1128.0 |
| 27.5°  | 1301.7 | 1253.6 | 1150.7 | 1084.4 | 1051.9 |
| 30°    | 1255.1 | 1201.4 | 1088.5 | 1016.7 | 978.6  |
| 32.5°  | 1209.9 | 1145.0 | 1029.4 | 944.8  | 909.5  |
| 35°    | 1159.2 | 1087.2 | 963.2  | 874.3  | 843.2  |
| 37.5°  | 1109.8 | 1032.2 | 901.1  | 803.7  | 768.5  |
| 40°    | 1057.6 | 973.1  | 836.2  | 736.1  | 699.5  |
| 42.5°  | 1004.0 | 913.8  | 771.4  | 666.9  | 631.8  |
| 45°    | 947.6  | 853.1  | 705.1  | 604.9  | 571.1  |
| 47.5°  | 894.1  | 794.0  | 641.7  | 541.5  | 510.5  |
| 50°    | 834.8  | 734.7  | 579.6  | 482.2  | 452.7  |
| 52.5°  | 776.9  | 671.2  | 520.4  | 427.3  | 400.5  |
| 55°    | 720.6  | 610.6  | 458.3  | 373.7  | 346.9  |
| 57.5°  | 662.8  | 550.0  | 403.3  | 324.3  | 301.8  |
| 60°    | 603.5  | 490.7  | 345.4  | 273.6  | 251.1  |
| 62.5°  | 545.8  | 433.0  | 296.1  | 228.5  | 217.3  |
| 65°    | 486.5  | 372.2  | 245.3  | 197.5  | 193.1  |
| 67.5°  | 430.2  | 315.8  | 197.5  | 173.4  | 169.2  |
| 70°    | 370.9  | 260.9  | 163.5  | 149.5  | 143.7  |
| 72.5°  | 314.5  | 210.1  | 136.8  | 125.5  | 122.7  |
| 75°    | 259.4  | 160.7  | 112.8  | 102.9  | 101.6  |
| 77.5°  | 204.5  | 114.1  | 88.9   | 83.2   | 80.3   |
| 80°    | 153.6  | 81.8   | 67.6   | 62.1   | 62.1   |
| 82.5°  | 107.2  | 55.0   | 46.6   | 43.6   | 43.6   |
| 85°    | 60.6   | 31.0   | 26.8   | 26.8   | 26.8   |
| 87.5°  | 22.6   | 11.2   | 11.2   | 9.9    | 9.9    |
| 90°    | 1.6    | 19.4   | 52.9   | 49.6   | 51.2   |
| 92.5°  | 33.5   | 45.3   | 46.9   | 48.5   | 48.5   |
| 95°    | 78.7   | 93.8   | 96.5   | 96.5   | 93.8   |
| 97.5°  | 131.0  | 145.1  | 151.0  | 151.0  | 151.0  |
| 100°   | 191.4  | 203.8  | 208.1  | 208.1  | 206.5  |
| 102.5° | 255.1  | 264.2  | 270.1  | 271.7  | 270.1  |
| 105°   | 324.6  | 328.9  | 332.2  | 334.9  | 334.9  |
| 107.5° | 393.6  | 400.1  | 400.1  | 401.1  | 393.6  |
| 110°   | 460.5  | 469.1  | 469.1  | 469.1  | 464.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 532.7  | 541.9  | 540.3  | 535.9  | 532.7  |
| 115°   | 603.9  | 612.6  | 609.8  | 608.2  | 603.9  |
| 117.5° | 674.6  | 686.5  | 678.8  | 674.6  | 670.2  |
| 120°   | 745.7  | 757.6  | 745.7  | 745.7  | 740.8  |
| 122.5° | 810.4  | 825.5  | 817.9  | 813.7  | 810.4  |
| 125°   | 878.4  | 891.8  | 887.5  | 882.7  | 881.1  |
| 127.5° | 944.7  | 961.4  | 955.5  | 949.0  | 944.7  |
| 130°   | 1006.7 | 1026.1 | 1023.4 | 1020.2 | 1014.3 |
| 132.5° | 1076.3 | 1091.4 | 1092.4 | 1084.9 | 1080.5 |
| 135°   | 1136.1 | 1152.8 | 1156.0 | 1154.4 | 1150.1 |
| 137.5° | 1203.0 | 1216.4 | 1219.2 | 1218.0 | 1211.6 |
| 140°   | 1261.8 | 1275.3 | 1282.8 | 1282.8 | 1276.9 |
| 142.5° | 1322.1 | 1335.6 | 1339.9 | 1341.5 | 1335.6 |
| 145°   | 1379.3 | 1390.1 | 1398.7 | 1400.3 | 1394.4 |
| 147.5° | 1430.5 | 1444.0 | 1450.5 | 1453.1 | 1447.2 |
| 150°   | 1483.4 | 1492.5 | 1498.5 | 1503.3 | 1498.5 |
| 152.5° | 1530.2 | 1539.5 | 1547.0 | 1552.9 | 1547.0 |
| 155°   | 1577.2 | 1581.5 | 1586.3 | 1593.9 | 1589.0 |
| 157.5° | 1617.6 | 1620.9 | 1623.5 | 1634.4 | 1626.8 |
| 160°   | 1653.8 | 1657.0 | 1658.6 | 1667.7 | 1661.3 |
| 162.5° | 1687.2 | 1687.2 | 1688.8 | 1699.0 | 1691.5 |
| 165°   | 1715.7 | 1714.1 | 1714.1 | 1724.9 | 1717.4 |
| 167.5° | 1741.6 | 1736.8 | 1736.8 | 1747.6 | 1740.0 |
| 170°   | 1761.0 | 1756.7 | 1755.1 | 1765.9 | 1756.7 |
| 172.5° | 1774.5 | 1770.2 | 1768.6 | 1779.3 | 1770.2 |
| 175°   | 1785.3 | 1781.0 | 1777.7 | 1788.6 | 1779.3 |
| 177.5° | 1791.2 | 1787.0 | 1783.7 | 1792.8 | 1783.7 |
| 180°   | 1788.6 | 1788.6 | 1788.6 | 1788.6 | 1788.6 |

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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 | 8.01             | 8.76  | 9.07  | 9.81  | 11.24 | 3.97           | 4.72 | 5.02 | 5.77 | 7.20  |
|                 | 3H   | 9.68             | 10.35 | 10.74 | 11.41 | 12.85 | 5.15           | 5.82 | 6.21 | 6.88 | 8.32  |
|                 | 4H   | 10.28            | 10.92 | 11.35 | 11.98 | 13.43 | 5.59           | 6.23 | 6.66 | 7.29 | 8.74  |
|                 | 6H   | 10.70            | 11.28 | 11.78 | 12.35 | 13.80 | 5.90           | 6.49 | 6.98 | 7.55 | 9.01  |
|                 | 8H   | 10.82            | 11.37 | 11.90 | 12.45 | 13.91 | 5.99           | 6.54 | 7.07 | 7.62 | 9.08  |
|                 | 12H  | 10.88            | 11.40 | 11.97 | 12.48 | 13.95 | 6.03           | 6.55 | 7.12 | 7.63 | 9.10  |
| 4H              | 2H   | 8.02             | 8.65  | 9.10  | 9.72  | 11.16 | 4.56           | 5.19 | 5.64 | 6.25 | 7.70  |
|                 | 3H   | 9.84             | 10.36 | 10.92 | 11.45 | 12.91 | 5.89           | 6.42 | 6.98 | 7.51 | 8.97  |
|                 | 4H   | 10.52            | 11.01 | 11.61 | 12.09 | 13.57 | 6.43           | 6.91 | 7.52 | 8.00 | 9.48  |
|                 | 6H   | 11.03            | 11.44 | 12.13 | 12.55 | 14.02 | 6.84           | 7.25 | 7.94 | 8.36 | 9.83  |
|                 | 8H   | 11.20            | 11.59 | 12.30 | 12.68 | 14.17 | 6.96           | 7.35 | 8.06 | 8.44 | 9.93  |
|                 | 12H  | 11.29            | 11.64 | 12.40 | 12.75 | 14.24 | 7.02           | 7.37 | 8.14 | 8.48 | 9.97  |
| 8H              | 4H   | 10.48            | 10.87 | 11.58 | 11.96 | 13.45 | 6.70           | 7.09 | 7.80 | 8.18 | 9.67  |
|                 | 6H   | 11.04            | 11.36 | 12.16 | 12.50 | 13.98 | 7.21           | 7.53 | 8.33 | 8.67 | 10.15 |
|                 | 8H   | 11.25            | 11.53 | 12.38 | 12.65 | 14.16 | 7.39           | 7.67 | 8.52 | 8.79 | 10.30 |
|                 | 12H  | 11.38            | 11.63 | 12.51 | 12.74 | 14.29 | 7.50           | 7.75 | 8.64 | 8.87 | 10.41 |
| 12H             | 4H   | 10.43            | 10.78 | 11.55 | 11.89 | 13.38 | 6.70           | 7.05 | 7.82 | 8.16 | 9.66  |
|                 | 6H   | 11.01            | 11.29 | 12.14 | 12.41 | 13.92 | 7.26           | 7.54 | 8.38 | 8.66 | 10.16 |
|                 | 8H   | 11.23            | 11.47 | 12.36 | 12.59 | 14.13 | 7.46           | 7.70 | 8.59 | 8.82 | 10.36 |

END OF REPORT