

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: P916603

Luminaire Tested: DFN2DIP-PN3F0-030D060US930-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916603  
REPORT IS A COMBINATION OF REPORTS P901074 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-030D060US930-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

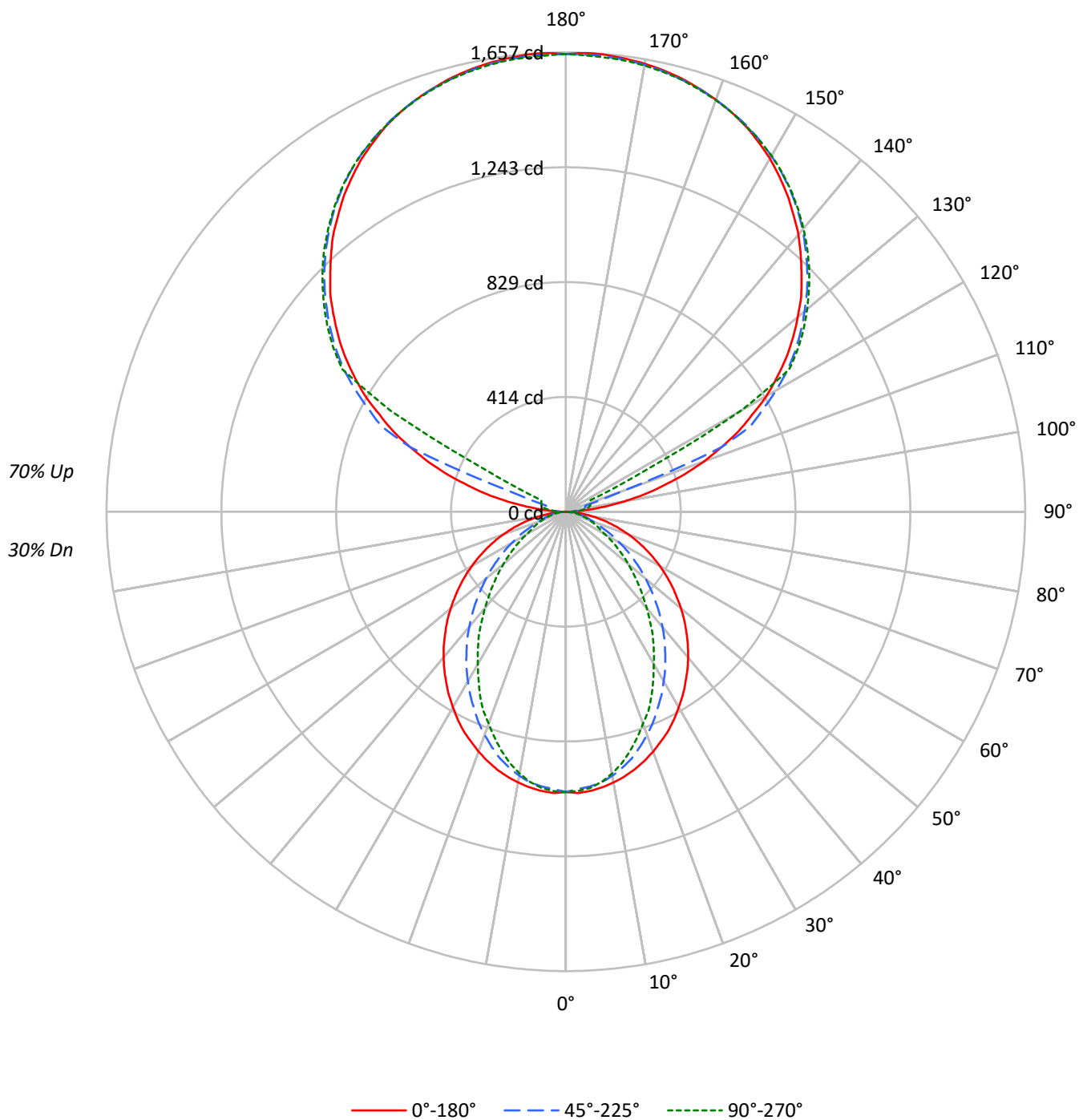
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6921.9 lumens  
Efficiency: N/A  
Efficacy: 99.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 69.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 |
| 2   | 85  | 78  | 73  | 68  | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 |
| 4   | 71  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1182 | 1182 | 1182 |
| 5°  | 1183 | 1162 | 1170 |
| 10° | 1170 | 1138 | 1131 |
| 15° | 1154 | 1100 | 1072 |
| 20° | 1132 | 1047 | 999  |
| 25° | 1109 | 989  | 929  |
| 30° | 1079 | 928  | 841  |
| 35° | 1050 | 863  | 763  |
| 40° | 1020 | 797  | 673  |
| 45° | 985  | 723  | 592  |
| 50° | 949  | 648  | 513  |
| 55° | 911  | 568  | 438  |
| 60° | 867  | 485  | 360  |
| 65° | 817  | 400  | 323  |
| 70° | 756  | 321  | 292  |
| 75° | 679  | 282  | 264  |
| 80° | 568  | 234  | 228  |
| 85° | 386  | 152  | 168  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1114 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 94.7   | 1.4       |
| 10°-20°   | 260.1  | 3.8       |
| 20°-30°   | 365.1  | 5.3       |
| 30°-40°   | 398.0  | 5.8       |
| 40°-50°   | 365.8  | 5.3       |
| 50°-60°   | 287.3  | 4.2       |
| 60°-70°   | 187.0  | 2.7       |
| 70°-80°   | 96.3   | 1.4       |
| 80°-90°   | 27.5   | 0.4       |
| 90°-100°  | 54.4   | 0.8       |
| 100°-110° | 202.9  | 2.9       |
| 110°-120° | 538.2  | 7.8       |
| 120°-130° | 892.7  | 12.9      |
| 130°-140° | 948.2  | 13.7      |
| 140°-150° | 881.3  | 12.7      |
| 150°-160° | 708.5  | 10.2      |
| 160°-170° | 456.5  | 6.6       |
| 170°-180° | 157.1  | 2.3       |
| 0°-30°    | 720.0  | 10.4      |
| 0°-40°    | 1118.0 | 16.2      |
| 0°-60°    | 1771.2 | 25.6      |
| 0°-90°    | 2081.9 | 30.1      |
| 90°-120°  | 795.6  | 11.5      |
| 90°-150°  | 3517.8 | 50.8      |
| 90°-180°  | 4840.0 | 69.9      |
| 0°-180°   | 6921.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1011 | 1011  | 1011 | 1011  | 1011 |      |
| 5°   | 1011 | 1006  | 994  | 1003  | 1000 | 96   |
| 15°  | 962  | 951   | 920  | 903   | 894  | 271  |
| 25°  | 873  | 843   | 783  | 746   | 732  | 401  |
| 35°  | 752  | 705   | 625  | 567   | 547  | 471  |
| 45°  | 615  | 553   | 458  | 392   | 370  | 475  |
| 55°  | 467  | 396   | 297  | 242   | 225  | 418  |
| 65°  | 316  | 242   | 159  | 128   | 125  | 313  |
| 75°  | 168  | 104   | 73   | 67    | 66   | 178  |
| 85°  | 39   | 20    | 17   | 17    | 17   | 45   |
| 90°  | 1    | 14    | 24   | 30    | 32   | 6    |
| 95°  | 78   | 38    | 47   | 53    | 51   | 92   |
| 105° | 363  | 399   | 73   | 86    | 91   | 388  |
| 115° | 687  | 707   | 737  | 184   | 98   | 676  |
| 125° | 971  | 987   | 1009 | 1018  | 1021 | 866  |
| 135° | 1202 | 1221  | 1232 | 1244  | 1241 | 928  |
| 145° | 1394 | 1393  | 1413 | 1422  | 1416 | 872  |
| 155° | 1535 | 1524  | 1539 | 1546  | 1536 | 707  |
| 165° | 1618 | 1610  | 1614 | 1622  | 1614 | 457  |
| 175° | 1654 | 1646  | 1648 | 1657  | 1645 | 157  |
| 180° | 1651 | 1651  | 1651 | 1651  | 1651 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1010.9 | 1010.9 | 1010.9 | 1010.9 | 1010.9 |
| 2.5°   | 1015.5 | 1010.9 | 1000.8 | 1010.0 | 1008.2 |
| 5°     | 1010.9 | 1006.3 | 994.4  | 1002.7 | 999.9  |
| 7.5°   | 1002.7 | 997.2  | 984.4  | 988.0  | 983.4  |
| 10°    | 991.6  | 985.3  | 967.0  | 964.2  | 958.8  |
| 12.5°  | 978.0  | 969.7  | 945.0  | 939.5  | 929.4  |
| 15°    | 961.5  | 951.4  | 920.3  | 902.9  | 893.8  |
| 17.5°  | 942.2  | 927.6  | 889.2  | 869.1  | 854.4  |
| 20°    | 920.3  | 902.0  | 856.2  | 833.5  | 813.3  |
| 22.5°  | 896.6  | 875.5  | 822.4  | 791.3  | 777.6  |
| 25°    | 872.8  | 843.4  | 783.1  | 745.6  | 731.8  |
| 27.5°  | 844.4  | 813.3  | 746.5  | 703.5  | 682.4  |
| 30°    | 814.2  | 779.4  | 706.2  | 659.7  | 634.9  |
| 32.5°  | 784.9  | 742.8  | 667.9  | 612.9  | 590.0  |
| 35°    | 752.0  | 705.3  | 624.8  | 567.2  | 547.1  |
| 37.5°  | 720.0  | 669.6  | 584.6  | 521.4  | 498.6  |
| 40°    | 686.2  | 631.3  | 542.5  | 477.5  | 453.8  |
| 42.5°  | 651.3  | 592.9  | 500.4  | 432.7  | 409.9  |
| 45°    | 614.8  | 553.4  | 457.5  | 392.4  | 370.5  |
| 47.5°  | 580.0  | 515.1  | 416.3  | 351.2  | 331.2  |
| 50°    | 541.6  | 476.6  | 376.0  | 312.8  | 293.7  |
| 52.5°  | 504.0  | 435.5  | 337.6  | 277.2  | 259.8  |
| 55°    | 467.4  | 396.1  | 297.3  | 242.5  | 225.1  |
| 57.5°  | 430.0  | 356.8  | 261.7  | 210.4  | 195.8  |
| 60°    | 391.5  | 318.4  | 224.1  | 177.5  | 162.9  |
| 62.5°  | 354.1  | 280.9  | 192.1  | 148.2  | 141.0  |
| 65°    | 315.6  | 241.5  | 159.1  | 128.1  | 125.3  |
| 67.5°  | 279.1  | 204.9  | 128.1  | 112.5  | 109.7  |
| 70°    | 240.6  | 169.3  | 106.1  | 96.9   | 93.3   |
| 72.5°  | 204.0  | 136.2  | 88.7   | 81.4   | 79.6   |
| 75°    | 168.3  | 104.3  | 73.2   | 66.8   | 65.9   |
| 77.5°  | 132.6  | 74.0   | 57.6   | 54.0   | 52.1   |
| 80°    | 99.7   | 53.1   | 43.9   | 40.3   | 40.3   |
| 82.5°  | 69.5   | 35.7   | 30.2   | 28.4   | 28.4   |
| 85°    | 39.3   | 20.1   | 17.4   | 17.4   | 17.4   |
| 87.5°  | 14.7   | 7.3    | 7.3    | 6.4    | 6.4    |
| 90°    | 1.1    | 14.3   | 23.8   | 29.9   | 32.2   |
| 92.5°  | 29.9   | 25.1   | 28.6   | 31.1   | 32.2   |
| 95°    | 77.6   | 38.2   | 46.6   | 52.7   | 51.4   |
| 97.5°  | 139.7  | 41.8   | 60.8   | 64.6   | 65.7   |
| 100°   | 211.5  | 47.8   | 68.1   | 77.6   | 80.0   |
| 102.5° | 290.2  | 288.0  | 70.5   | 83.6   | 87.2   |
| 105°   | 363.1  | 399.0  | 72.9   | 85.9   | 90.8   |
| 107.5° | 448.0  | 477.8  | 75.3   | 88.4   | 93.2   |
| 110°   | 529.3  | 554.2  | 209.1  | 89.7   | 94.3   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 605.7  | 627.1  | 606.8  | 91.9   | 95.6   |
| 115°   | 686.9  | 707.2  | 737.1  | 184.0  | 98.0   |
| 117.5° | 757.3  | 781.2  | 801.6  | 630.7  | 317.7  |
| 120°   | 836.3  | 854.1  | 875.7  | 890.0  | 728.7  |
| 122.5° | 903.0  | 922.2  | 946.2  | 953.2  | 954.6  |
| 125°   | 971.2  | 986.8  | 1009.4 | 1017.8 | 1021.3 |
| 127.5° | 1033.3 | 1050.0 | 1068.0 | 1079.9 | 1081.1 |
| 130°   | 1091.8 | 1111.0 | 1124.1 | 1137.3 | 1136.1 |
| 132.5° | 1151.6 | 1167.2 | 1180.2 | 1191.0 | 1189.8 |
| 135°   | 1201.8 | 1221.0 | 1231.6 | 1243.7 | 1241.2 |
| 137.5° | 1254.3 | 1268.6 | 1280.7 | 1292.6 | 1289.1 |
| 140°   | 1305.6 | 1315.3 | 1328.4 | 1339.1 | 1333.2 |
| 142.5° | 1348.7 | 1357.1 | 1372.6 | 1382.1 | 1376.1 |
| 145°   | 1394.2 | 1392.9 | 1413.2 | 1421.6 | 1415.6 |
| 147.5° | 1433.5 | 1429.9 | 1450.2 | 1456.1 | 1451.5 |
| 150°   | 1471.8 | 1463.4 | 1482.5 | 1489.6 | 1483.7 |
| 152.5° | 1504.0 | 1494.4 | 1512.3 | 1519.6 | 1511.2 |
| 155°   | 1535.0 | 1524.4 | 1538.7 | 1545.8 | 1536.3 |
| 157.5° | 1560.2 | 1550.6 | 1561.4 | 1569.8 | 1560.2 |
| 160°   | 1581.7 | 1574.4 | 1581.7 | 1588.8 | 1580.5 |
| 162.5° | 1600.7 | 1593.6 | 1599.5 | 1607.9 | 1597.2 |
| 165°   | 1617.5 | 1610.4 | 1613.9 | 1622.3 | 1613.9 |
| 167.5° | 1630.6 | 1623.4 | 1627.1 | 1635.5 | 1624.6 |
| 170°   | 1641.4 | 1634.2 | 1636.6 | 1644.9 | 1634.2 |
| 172.5° | 1648.5 | 1641.4 | 1643.8 | 1652.2 | 1641.4 |
| 175°   | 1654.5 | 1646.1 | 1648.5 | 1656.8 | 1644.9 |
| 177.5° | 1656.8 | 1648.5 | 1649.8 | 1658.2 | 1647.4 |
| 180°   | 1650.9 | 1650.9 | 1650.9 | 1650.9 | 1650.9 |

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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 | 5.47             | 6.16 | 6.58 | 7.26  | 8.80  | 1.43           | 2.12 | 2.55 | 3.23 | 4.76 |
|                 | 3H   | 7.13             | 7.75 | 8.25 | 8.86  | 10.41 | 2.60           | 3.22 | 3.73 | 4.34 | 5.88 |
|                 | 4H   | 7.73             | 8.31 | 8.86 | 9.43  | 10.98 | 3.04           | 3.63 | 4.18 | 4.75 | 6.30 |
|                 | 6H   | 8.14             | 8.67 | 9.28 | 9.79  | 11.36 | 3.35           | 3.89 | 4.49 | 5.01 | 6.57 |
|                 | 8H   | 8.25             | 8.77 | 9.40 | 9.90  | 11.46 | 3.44           | 3.95 | 4.58 | 5.08 | 6.64 |
|                 | 12H  | 8.31             | 8.80 | 9.46 | 9.92  | 11.50 | 3.47           | 3.96 | 4.62 | 5.09 | 6.67 |
| 4H              | 2H   | 5.47             | 6.05 | 6.61 | 7.17  | 8.72  | 2.01           | 2.59 | 3.15 | 3.71 | 5.26 |
|                 | 3H   | 7.28             | 7.76 | 8.42 | 8.91  | 10.47 | 3.34           | 3.82 | 4.48 | 4.97 | 6.53 |
|                 | 4H   | 7.96             | 8.41 | 9.11 | 9.54  | 11.12 | 3.87           | 4.32 | 5.02 | 5.45 | 7.04 |
|                 | 6H   | 8.46             | 8.84 | 9.61 | 10.00 | 11.57 | 4.28           | 4.66 | 5.44 | 5.82 | 7.39 |
|                 | 8H   | 8.63             | 8.99 | 9.78 | 10.13 | 11.72 | 4.40           | 4.76 | 5.56 | 5.91 | 7.50 |
|                 | 12H  | 8.71             | 9.04 | 9.88 | 10.19 | 11.79 | 4.46           | 4.78 | 5.63 | 5.94 | 7.54 |
| 8H              | 4H   | 7.91             | 8.27 | 9.07 | 9.42  | 11.01 | 4.14           | 4.50 | 5.30 | 5.64 | 7.24 |
|                 | 6H   | 8.47             | 8.76 | 9.64 | 9.95  | 11.54 | 4.65           | 4.94 | 5.82 | 6.13 | 7.72 |
|                 | 8H   | 8.68             | 8.94 | 9.86 | 10.10 | 11.71 | 4.83           | 5.09 | 6.01 | 6.26 | 7.87 |
|                 | 12H  | 8.81             | 9.03 | 9.99 | 10.20 | 11.84 | 4.94           | 5.17 | 6.12 | 6.33 | 7.97 |
| 12H             | 4H   | 7.86             | 8.18 | 9.03 | 9.34  | 10.94 | 4.14           | 4.46 | 5.31 | 5.62 | 7.22 |
|                 | 6H   | 8.44             | 8.70 | 9.62 | 9.87  | 11.48 | 4.69           | 4.95 | 5.87 | 6.12 | 7.73 |
|                 | 8H   | 8.65             | 8.88 | 9.84 | 10.04 | 11.68 | 4.89           | 5.12 | 6.08 | 6.28 | 7.93 |

END OF REPORT