

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: P911162

Luminaire Tested: DFN2DIP-PN3F0-040D030US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911162  
REPORT IS A COMBINATION OF REPORTS P899514 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D030US850-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

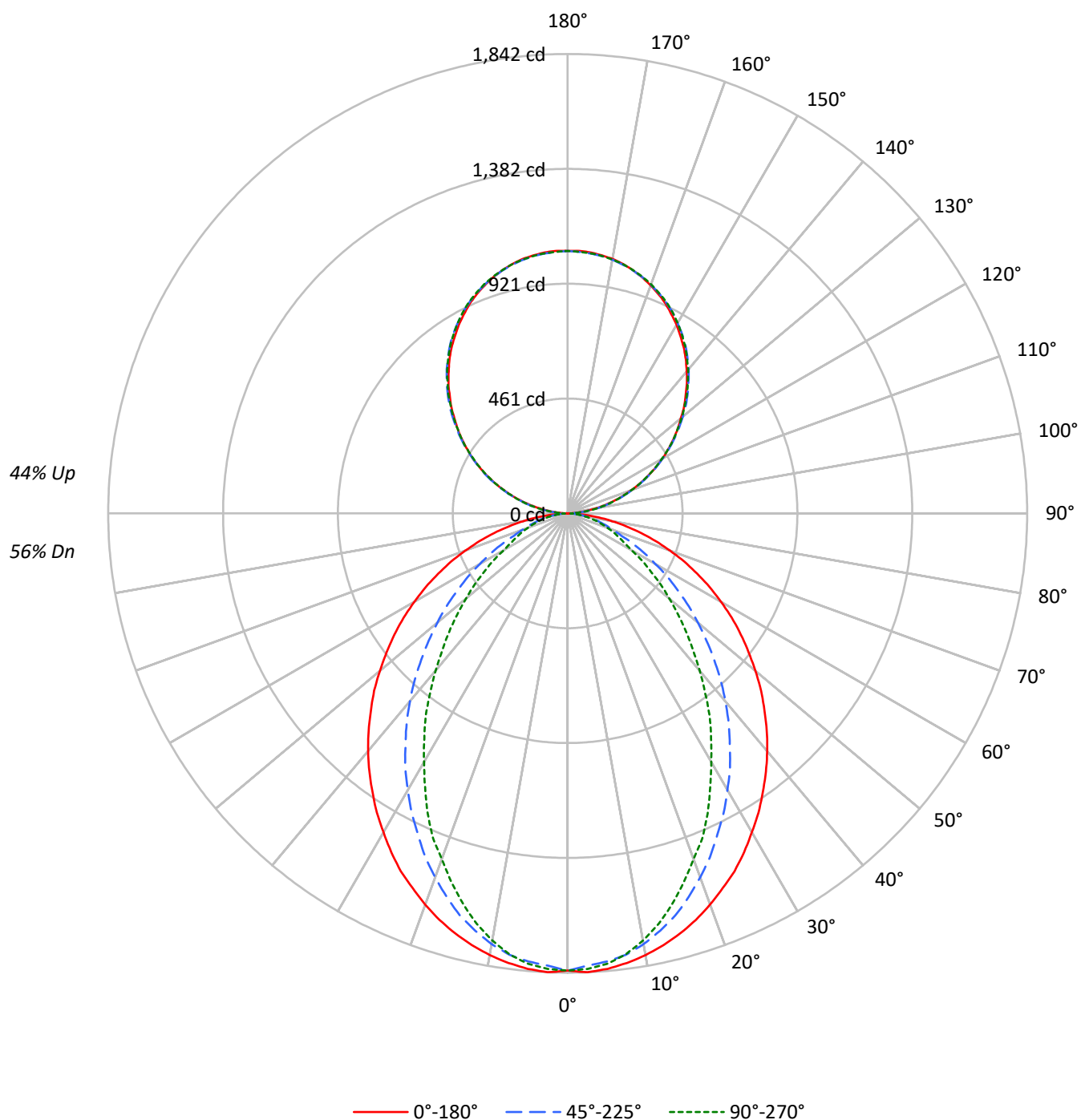
Lumens per Lamp: N/A  
Luminaire Lumens: 6714.9 lumens  
Efficiency: N/A  
Efficacy: 115.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 58  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 55 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 49 | 47 | 46 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 30 |
| 6   | 65  | 53  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 31 | 33 | 30 | 27 |
| 7   | 61  | 48  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2143 | 2143 | 2143 |
| 5°  | 2145 | 2108 | 2122 |
| 10° | 2123 | 2065 | 2052 |
| 15° | 2092 | 1995 | 1944 |
| 20° | 2052 | 1900 | 1813 |
| 25° | 2012 | 1793 | 1685 |
| 30° | 1957 | 1684 | 1525 |
| 35° | 1904 | 1566 | 1383 |
| 40° | 1849 | 1445 | 1221 |
| 45° | 1786 | 1310 | 1074 |
| 50° | 1720 | 1175 | 931  |
| 55° | 1652 | 1030 | 794  |
| 60° | 1573 | 879  | 652  |
| 65° | 1481 | 726  | 586  |
| 70° | 1371 | 583  | 529  |
| 75° | 1231 | 511  | 480  |
| 80° | 1029 | 423  | 413  |
| 85° | 699  | 276  | 305  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1786 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 171.8  | 2.6       |
| 10°-20°   | 471.7  | 7.0       |
| 20°-30°   | 662.3  | 9.9       |
| 30°-40°   | 721.9  | 10.8      |
| 40°-50°   | 663.5  | 9.9       |
| 50°-60°   | 521.1  | 7.8       |
| 60°-70°   | 339.2  | 5.1       |
| 70°-80°   | 174.6  | 2.6       |
| 80°-90°   | 47.6   | 0.7       |
| 90°-100°  | 65.1   | 1.0       |
| 100°-110° | 206.9  | 3.1       |
| 110°-120° | 354.0  | 5.3       |
| 120°-130° | 465.6  | 6.9       |
| 130°-140° | 522.6  | 7.8       |
| 140°-150° | 512.5  | 7.6       |
| 150°-160° | 429.9  | 6.4       |
| 160°-170° | 285.1  | 4.2       |
| 170°-180° | 99.7   | 1.5       |
| 0°-30°    | 1305.8 | 19.4      |
| 0°-40°    | 2027.7 | 30.2      |
| 0°-60°    | 3212.2 | 47.8      |
| 0°-90°    | 3773.6 | 56.2      |
| 90°-120°  | 626.0  | 9.3       |
| 90°-150°  | 2126.7 | 31.7      |
| 90°-180°  | 2941.0 | 43.8      |
| 0°-180°   | 6714.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 1    | 11    | 31   | 29    | 30   | 7    |
| 95°  | 46   | 55    | 57   | 57    | 55   | 52   |
| 105° | 191  | 194   | 195  | 197   | 197  | 202  |
| 115° | 355  | 360   | 359  | 358   | 355  | 351  |
| 125° | 517  | 525   | 522  | 519   | 518  | 462  |
| 135° | 668  | 678   | 680  | 679   | 677  | 517  |
| 145° | 812  | 818   | 823  | 824   | 820  | 507  |
| 155° | 928  | 930   | 933  | 938   | 935  | 427  |
| 165° | 1009 | 1008  | 1008 | 1015  | 1010 | 285  |
| 175° | 1050 | 1048  | 1046 | 1052  | 1047 | 100  |
| 180° | 1052 | 1052  | 1052 | 1052  | 1052 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 1.0    | 11.4   | 31.1   | 29.2   | 30.2   |
| 92.5°  | 19.6   | 26.6   | 27.6   | 28.5   | 28.5   |
| 95°    | 46.4   | 55.2   | 56.8   | 56.8   | 55.2   |
| 97.5°  | 77.1   | 85.3   | 88.8   | 88.8   | 88.8   |
| 100°   | 112.6  | 119.9  | 122.4  | 122.4  | 121.5  |
| 102.5° | 150.0  | 155.5  | 158.9  | 159.9  | 158.9  |
| 105°   | 191.0  | 193.5  | 195.4  | 197.0  | 197.0  |
| 107.5° | 231.6  | 235.3  | 235.3  | 236.0  | 231.6  |
| 110°   | 270.9  | 276.0  | 276.0  | 276.0  | 273.5  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 313.4  | 318.8  | 317.8  | 315.3  | 313.4  |
| 115°   | 355.3  | 360.3  | 358.8  | 357.9  | 355.3  |
| 117.5° | 396.8  | 403.8  | 399.4  | 396.8  | 394.2  |
| 120°   | 438.7  | 445.7  | 438.7  | 438.7  | 435.8  |
| 122.5° | 476.8  | 485.6  | 481.2  | 478.6  | 476.8  |
| 125°   | 516.8  | 524.7  | 522.1  | 519.2  | 518.3  |
| 127.5° | 555.7  | 565.6  | 562.2  | 558.3  | 555.7  |
| 130°   | 592.2  | 603.6  | 602.1  | 600.2  | 596.6  |
| 132.5° | 633.1  | 642.0  | 642.7  | 638.2  | 635.7  |
| 135°   | 668.4  | 678.2  | 680.1  | 679.2  | 676.6  |
| 137.5° | 707.7  | 715.6  | 717.2  | 716.6  | 712.8  |
| 140°   | 742.3  | 750.2  | 754.7  | 754.7  | 751.1  |
| 142.5° | 777.9  | 785.7  | 788.3  | 789.3  | 785.7  |
| 145°   | 811.5  | 817.8  | 822.9  | 823.8  | 820.3  |
| 147.5° | 841.6  | 849.5  | 853.3  | 854.9  | 851.4  |
| 150°   | 872.7  | 878.1  | 881.5  | 884.4  | 881.5  |
| 152.5° | 900.3  | 905.6  | 910.0  | 913.6  | 910.0  |
| 155°   | 927.9  | 930.3  | 933.2  | 937.7  | 934.9  |
| 157.5° | 951.6  | 953.5  | 955.2  | 961.5  | 957.1  |
| 160°   | 972.9  | 974.8  | 975.8  | 981.1  | 977.4  |
| 162.5° | 992.6  | 992.6  | 993.6  | 999.5  | 995.1  |
| 165°   | 1009.4 | 1008.4 | 1008.4 | 1014.7 | 1010.3 |
| 167.5° | 1024.6 | 1021.7 | 1021.7 | 1028.0 | 1023.6 |
| 170°   | 1036.0 | 1033.5 | 1032.6 | 1038.9 | 1033.5 |
| 172.5° | 1043.9 | 1041.5 | 1040.5 | 1046.8 | 1041.5 |
| 175°   | 1050.3 | 1047.8 | 1045.9 | 1052.2 | 1046.8 |
| 177.5° | 1053.8 | 1051.2 | 1049.3 | 1054.8 | 1049.3 |
| 180°   | 1052.2 | 1052.2 | 1052.2 | 1052.2 | 1052.2 |

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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 | 10.32            | 11.20 | 11.22 | 12.12 | 13.30 | 6.28           | 7.16  | 7.19  | 8.09  | 9.27  |
|                 | 3H   | 11.99            | 12.78 | 12.91 | 13.71 | 14.92 | 7.47           | 8.26  | 8.39  | 9.19  | 10.40 |
|                 | 4H   | 12.60            | 13.34 | 13.53 | 14.28 | 15.50 | 7.92           | 8.66  | 8.85  | 9.60  | 10.82 |
|                 | 6H   | 13.02            | 13.70 | 13.97 | 14.65 | 15.88 | 8.24           | 8.92  | 9.18  | 9.87  | 11.10 |
|                 | 8H   | 13.14            | 13.80 | 14.10 | 14.76 | 15.98 | 8.32           | 8.98  | 9.28  | 9.94  | 11.17 |
|                 | 12H  | 13.20            | 13.83 | 14.16 | 14.78 | 16.03 | 8.37           | 8.99  | 9.33  | 9.94  | 11.19 |
| 4H              | 2H   | 10.34            | 11.08 | 11.28 | 12.02 | 13.24 | 6.88           | 7.63  | 7.82  | 8.56  | 9.78  |
|                 | 3H   | 12.17            | 12.79 | 13.12 | 13.75 | 14.98 | 8.23           | 8.85  | 9.18  | 9.82  | 11.05 |
|                 | 4H   | 12.86            | 13.42 | 13.82 | 14.38 | 15.64 | 8.77           | 9.34  | 9.73  | 10.30 | 11.56 |
|                 | 6H   | 13.37            | 13.85 | 14.34 | 14.84 | 16.10 | 9.19           | 9.68  | 10.16 | 10.66 | 11.92 |
|                 | 8H   | 13.54            | 13.99 | 14.52 | 14.97 | 16.24 | 9.32           | 9.77  | 10.29 | 10.75 | 12.02 |
|                 | 12H  | 13.63            | 14.04 | 14.63 | 15.04 | 16.31 | 9.38           | 9.79  | 10.37 | 10.78 | 12.06 |
| 8H              | 4H   | 12.83            | 13.28 | 13.80 | 14.26 | 15.53 | 9.05           | 9.51  | 10.03 | 10.49 | 11.76 |
|                 | 6H   | 13.39            | 13.76 | 14.39 | 14.78 | 16.05 | 9.57           | 9.94  | 10.57 | 10.96 | 12.23 |
|                 | 8H   | 13.60            | 13.93 | 14.61 | 14.94 | 16.23 | 9.75           | 10.08 | 10.76 | 11.09 | 12.38 |
|                 | 12H  | 13.74            | 14.03 | 14.75 | 15.03 | 16.36 | 9.87           | 10.16 | 10.88 | 11.16 | 12.49 |
| 12H             | 4H   | 12.78            | 13.19 | 13.77 | 14.19 | 15.46 | 9.06           | 9.47  | 10.05 | 10.47 | 11.74 |
|                 | 6H   | 13.36            | 13.69 | 14.37 | 14.70 | 15.99 | 9.61           | 9.95  | 10.62 | 10.95 | 12.24 |
|                 | 8H   | 13.58            | 13.87 | 14.59 | 14.87 | 16.21 | 9.82           | 10.11 | 10.83 | 11.12 | 12.45 |

END OF REPORT