

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: P924719

Luminaire Tested: DFN2DIP-PN2F0-040D030US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924719  
REPORT IS A COMBINATION OF REPORTS P900996 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-040D030US950-RLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

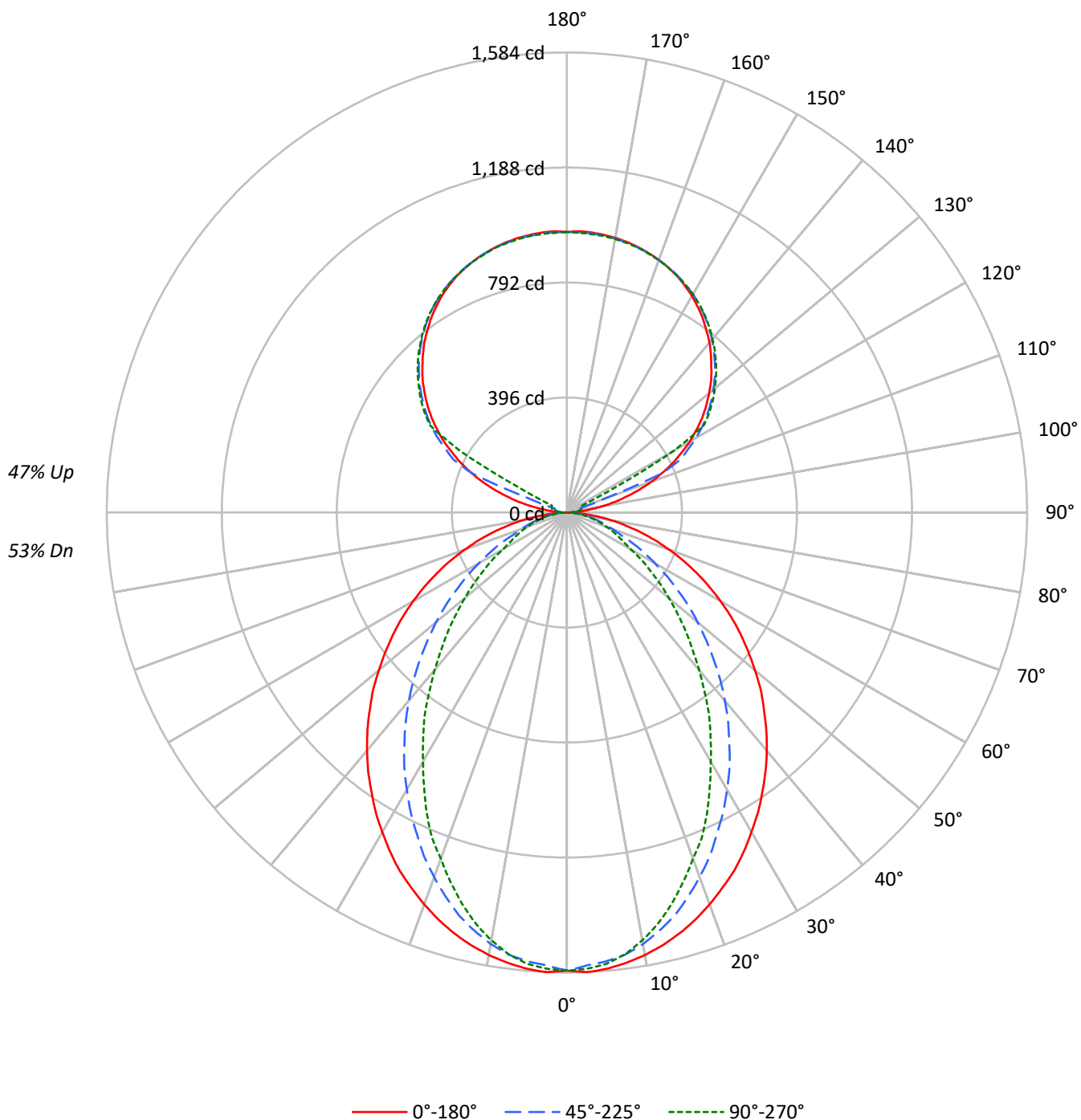
Lumens per Lamp: N/A  
Luminaire Lumens: 6077.0 lumens  
Efficiency: N/A  
Efficacy: 104.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 58.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 59 | 59 | 59 |
| 1   | 99  | 95  | 91  | 88  | 92  | 88  | 85  | 82  | 76 | 73 | 71 | 64 | 62 | 61 | 53 | 52 | 51 |
| 2   | 91  | 83  | 78  | 73  | 84  | 78  | 73  | 68  | 67 | 63 | 60 | 57 | 54 | 52 | 47 | 45 | 44 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 59 | 55 | 51 | 51 | 47 | 44 | 42 | 40 | 38 |
| 4   | 76  | 66  | 58  | 52  | 70  | 61  | 55  | 49  | 53 | 48 | 44 | 45 | 42 | 38 | 38 | 35 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 42 | 38 | 41 | 37 | 34 | 35 | 32 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 50  | 43  | 37  | 43 | 38 | 34 | 37 | 33 | 30 | 32 | 28 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 30 | 26 | 29 | 26 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 29  | 36 | 31 | 27 | 31 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 26  | 33 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 31 | 25 | 22 | 27 | 23 | 20 | 23 | 20 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3416 | 3416 | 3416 |
| 5°  | 3416 | 3354 | 3378 |
| 10° | 3377 | 3281 | 3263 |
| 15° | 3325 | 3166 | 3089 |
| 20° | 3258 | 3010 | 2876 |
| 25° | 3189 | 2836 | 2671 |
| 30° | 3099 | 2658 | 2413 |
| 35° | 3010 | 2468 | 2186 |
| 40° | 2920 | 2272 | 1927 |
| 45° | 2815 | 2056 | 1693 |
| 50° | 2706 | 1838 | 1464 |
| 55° | 2592 | 1606 | 1244 |
| 60° | 2459 | 1364 | 1019 |
| 65° | 2308 | 1120 | 912  |
| 70° | 2122 | 892  | 818  |
| 75° | 1888 | 773  | 734  |
| 80° | 1554 | 627  | 622  |
| 85° | 1016 | 390  | 441  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2815 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 147.8  | 2.4       |
| 10°-20°   | 405.8  | 6.7       |
| 20°-30°   | 569.7  | 9.4       |
| 30°-40°   | 621.0  | 10.2      |
| 40°-50°   | 570.8  | 9.4       |
| 50°-60°   | 448.2  | 7.4       |
| 60°-70°   | 291.8  | 4.8       |
| 70°-80°   | 150.2  | 2.5       |
| 80°-90°   | 40.1   | 0.7       |
| 90°-100°  | 31.9   | 0.5       |
| 100°-110° | 118.7  | 2.0       |
| 110°-120° | 314.9  | 5.2       |
| 120°-130° | 522.3  | 8.6       |
| 130°-140° | 554.8  | 9.1       |
| 140°-150° | 515.6  | 8.5       |
| 150°-160° | 414.5  | 6.8       |
| 160°-170° | 267.1  | 4.4       |
| 170°-180° | 91.9   | 1.5       |
| 0°-30°    | 1123.3 | 18.5      |
| 0°-40°    | 1744.3 | 28.7      |
| 0°-60°    | 2763.3 | 45.5      |
| 0°-90°    | 3245.3 | 53.4      |
| 90°-120°  | 465.5  | 7.7       |
| 90°-150°  | 2058.1 | 33.9      |
| 90°-180°  | 2832.0 | 46.6      |
| 0°-180°   | 6077.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1577 | 1577  | 1577 | 1577  | 1577 |      |
| 5°   | 1577 | 1570  | 1551 | 1564  | 1560 | 150  |
| 15°  | 1500 | 1484  | 1436 | 1409  | 1395 | 423  |
| 25°  | 1362 | 1316  | 1222 | 1163  | 1142 | 626  |
| 35°  | 1173 | 1100  | 975  | 885   | 853  | 734  |
| 45°  | 959  | 864   | 714  | 612   | 578  | 741  |
| 55°  | 729  | 618   | 464  | 378   | 351  | 652  |
| 65°  | 492  | 377   | 248  | 200   | 196  | 488  |
| 75°  | 262  | 163   | 114  | 104   | 103  | 278  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 1    | 8     | 14   | 18    | 19   | 6    |
| 95°  | 45   | 22    | 27   | 31    | 30   | 54   |
| 105° | 212  | 233   | 43   | 50    | 53   | 227  |
| 115° | 402  | 414   | 431  | 108   | 57   | 396  |
| 125° | 568  | 577   | 591  | 596   | 598  | 507  |
| 135° | 703  | 714   | 721  | 728   | 726  | 543  |
| 145° | 816  | 815   | 827  | 832   | 828  | 510  |
| 155° | 898  | 892   | 900  | 904   | 899  | 414  |
| 165° | 946  | 942   | 944  | 949   | 944  | 267  |
| 175° | 968  | 963   | 964  | 969   | 962  | 92   |
| 180° | 966  | 966   | 966  | 966   | 966  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1577.2 | 1577.2 | 1577.2 | 1577.2 | 1577.2 |
| 2.5°   | 1584.3 | 1577.2 | 1561.4 | 1575.8 | 1572.9 |
| 5°     | 1577.2 | 1570.0 | 1551.4 | 1564.3 | 1560.1 |
| 7.5°   | 1564.3 | 1555.8 | 1535.8 | 1541.4 | 1534.3 |
| 10°    | 1547.2 | 1537.2 | 1508.7 | 1504.3 | 1495.9 |
| 12.5°  | 1525.8 | 1512.9 | 1474.3 | 1465.8 | 1450.1 |
| 15°    | 1500.1 | 1484.3 | 1435.9 | 1408.8 | 1394.6 |
| 17.5°  | 1470.1 | 1447.2 | 1387.2 | 1355.9 | 1333.0 |
| 20°    | 1435.9 | 1407.2 | 1335.9 | 1300.3 | 1268.8 |
| 22.5°  | 1398.8 | 1365.9 | 1283.0 | 1234.6 | 1213.3 |
| 25°    | 1361.6 | 1315.9 | 1221.7 | 1163.3 | 1141.7 |
| 27.5°  | 1317.5 | 1268.8 | 1164.6 | 1097.6 | 1064.7 |
| 30°    | 1270.3 | 1216.0 | 1101.8 | 1029.1 | 990.5  |
| 32.5°  | 1224.6 | 1158.9 | 1042.0 | 956.3  | 920.5  |
| 35°    | 1173.3 | 1100.4 | 974.9  | 884.9  | 853.4  |
| 37.5°  | 1123.3 | 1044.7 | 912.0  | 813.5  | 777.9  |
| 40°    | 1070.5 | 984.9  | 846.4  | 745.1  | 708.0  |
| 42.5°  | 1016.2 | 924.9  | 780.8  | 675.1  | 639.5  |
| 45°    | 959.2  | 863.5  | 713.7  | 612.3  | 578.0  |
| 47.5°  | 905.0  | 803.6  | 649.5  | 548.1  | 516.7  |
| 50°    | 845.0  | 743.6  | 586.6  | 488.1  | 458.2  |
| 52.5°  | 786.4  | 679.3  | 526.7  | 432.4  | 405.4  |
| 55°    | 729.3  | 618.0  | 463.8  | 378.3  | 351.2  |
| 57.5°  | 670.9  | 556.7  | 408.2  | 328.3  | 305.5  |
| 60°    | 610.8  | 496.7  | 349.6  | 276.9  | 254.1  |
| 62.5°  | 552.5  | 438.3  | 299.7  | 231.2  | 219.9  |
| 65°    | 492.5  | 376.7  | 248.3  | 199.9  | 195.5  |
| 67.5°  | 435.4  | 319.7  | 199.9  | 175.5  | 171.2  |
| 70°    | 375.4  | 264.1  | 165.5  | 151.3  | 145.5  |
| 72.5°  | 318.3  | 212.6  | 138.4  | 127.1  | 124.2  |
| 75°    | 262.5  | 162.7  | 114.2  | 104.2  | 102.8  |
| 77.5°  | 207.0  | 115.5  | 90.0   | 84.2   | 81.3   |
| 80°    | 155.5  | 82.8   | 68.4   | 62.9   | 62.9   |
| 82.5°  | 108.5  | 55.7   | 47.1   | 44.2   | 44.2   |
| 85°    | 61.3   | 31.4   | 27.1   | 27.1   | 27.1   |
| 87.5°  | 22.9   | 11.4   | 11.4   | 10.0   | 10.0   |
| 90°    | 0.7    | 8.4    | 13.9   | 17.6   | 18.8   |
| 92.5°  | 17.6   | 14.7   | 16.8   | 18.2   | 18.8   |
| 95°    | 45.4   | 22.3   | 27.2   | 30.8   | 30.1   |
| 97.5°  | 81.8   | 24.5   | 35.6   | 37.8   | 38.4   |
| 100°   | 123.7  | 28.0   | 39.9   | 45.4   | 46.8   |
| 102.5° | 169.8  | 168.5  | 41.2   | 48.8   | 51.0   |
| 105°   | 212.5  | 233.4  | 42.6   | 50.3   | 53.1   |
| 107.5° | 262.1  | 279.5  | 44.1   | 51.7   | 54.6   |
| 110°   | 309.7  | 324.3  | 122.3  | 52.5   | 55.2   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 354.4 | 366.9 | 355.1 | 53.8  | 55.9  |
| 115°   | 401.8 | 413.7 | 431.2 | 107.6 | 57.3  |
| 117.5° | 443.1 | 457.1 | 469.0 | 369.0 | 185.9 |
| 120°   | 489.2 | 499.7 | 512.3 | 520.7 | 426.3 |
| 122.5° | 528.3 | 539.6 | 553.6 | 557.7 | 558.5 |
| 125°   | 568.2 | 577.3 | 590.6 | 595.5 | 597.6 |
| 127.5° | 604.5 | 614.3 | 624.9 | 631.8 | 632.5 |
| 130°   | 638.8 | 650.1 | 657.7 | 665.3 | 664.7 |
| 132.5° | 673.7 | 682.9 | 690.5 | 696.8 | 696.1 |
| 135°   | 703.1 | 714.4 | 720.6 | 727.6 | 726.2 |
| 137.5° | 733.8 | 742.2 | 749.3 | 756.2 | 754.1 |
| 140°   | 763.9 | 769.5 | 777.1 | 783.4 | 780.0 |
| 142.5° | 789.1 | 794.0 | 803.1 | 808.6 | 805.2 |
| 145°   | 815.7 | 814.9 | 826.8 | 831.7 | 828.2 |
| 147.5° | 838.7 | 836.6 | 848.5 | 851.9 | 849.2 |
| 150°   | 861.1 | 856.2 | 867.4 | 871.5 | 868.0 |
| 152.5° | 879.9 | 874.3 | 884.8 | 889.0 | 884.2 |
| 155°   | 898.1 | 891.9 | 900.2 | 904.4 | 898.9 |
| 157.5° | 912.8 | 907.3 | 913.6 | 918.4 | 912.8 |
| 160°   | 925.4 | 921.2 | 925.4 | 929.6 | 924.6 |
| 162.5° | 936.5 | 932.3 | 935.9 | 940.7 | 934.4 |
| 165°   | 946.3 | 942.2 | 944.3 | 949.1 | 944.3 |
| 167.5° | 954.0 | 949.8 | 951.9 | 956.9 | 950.6 |
| 170°   | 960.3 | 956.1 | 957.5 | 962.4 | 956.1 |
| 172.5° | 964.5 | 960.3 | 961.7 | 966.6 | 960.3 |
| 175°   | 967.9 | 963.1 | 964.5 | 969.4 | 962.4 |
| 177.5° | 969.4 | 964.5 | 965.3 | 970.1 | 963.8 |
| 180°   | 965.9 | 965.9 | 965.9 | 965.9 | 965.9 |

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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 | 11.61            | 12.47 | 12.55 | 13.42 | 14.64 | 7.58           | 8.44  | 8.51  | 9.38  | 10.61 |
|                 | 3H   | 13.27            | 14.04 | 14.22 | 14.99 | 16.24 | 8.75           | 9.52  | 9.70  | 10.48 | 11.73 |
|                 | 4H   | 13.87            | 14.59 | 14.83 | 15.55 | 16.81 | 9.19           | 9.92  | 10.15 | 10.88 | 12.14 |
|                 | 6H   | 14.27            | 14.94 | 15.24 | 15.91 | 17.18 | 9.50           | 10.17 | 10.47 | 11.13 | 12.40 |
|                 | 8H   | 14.39            | 15.03 | 15.37 | 16.01 | 17.28 | 9.58           | 10.22 | 10.56 | 11.20 | 12.47 |
|                 | 12H  | 14.45            | 15.05 | 15.43 | 16.03 | 17.32 | 9.62           | 10.22 | 10.60 | 11.20 | 12.49 |
| 4H              | 2H   | 11.63            | 12.35 | 12.60 | 13.31 | 14.57 | 8.17           | 8.89  | 9.13  | 9.85  | 11.11 |
|                 | 3H   | 13.44            | 14.04 | 14.41 | 15.03 | 16.30 | 9.50           | 10.10 | 10.48 | 11.09 | 12.36 |
|                 | 4H   | 14.11            | 14.66 | 15.10 | 15.65 | 16.94 | 10.03          | 10.58 | 11.02 | 11.57 | 12.86 |
|                 | 6H   | 14.61            | 15.08 | 15.61 | 16.09 | 17.39 | 10.44          | 10.91 | 11.43 | 11.92 | 13.21 |
|                 | 8H   | 14.78            | 15.22 | 15.77 | 16.22 | 17.53 | 10.56          | 11.00 | 11.55 | 12.00 | 13.31 |
|                 | 12H  | 14.86            | 15.26 | 15.88 | 16.28 | 17.59 | 10.61          | 11.01 | 11.63 | 12.03 | 13.34 |
| 8H              | 4H   | 14.08            | 14.52 | 15.08 | 15.52 | 16.83 | 10.30          | 10.75 | 11.30 | 11.75 | 13.05 |
|                 | 6H   | 14.62            | 14.99 | 15.65 | 16.03 | 17.34 | 10.80          | 11.17 | 11.82 | 12.21 | 13.51 |
|                 | 8H   | 14.83            | 15.15 | 15.86 | 16.18 | 17.50 | 10.98          | 11.30 | 12.01 | 12.33 | 13.65 |
|                 | 12H  | 14.95            | 15.24 | 15.99 | 16.26 | 17.63 | 11.09          | 11.37 | 12.12 | 12.39 | 13.76 |
| 12H             | 4H   | 14.03            | 14.43 | 15.05 | 15.45 | 16.76 | 10.31          | 10.71 | 11.32 | 11.72 | 13.04 |
|                 | 6H   | 14.60            | 14.92 | 15.63 | 15.95 | 17.27 | 10.85          | 11.17 | 11.88 | 12.20 | 13.52 |
|                 | 8H   | 14.81            | 15.09 | 15.84 | 16.11 | 17.48 | 11.04          | 11.32 | 12.07 | 12.35 | 13.72 |

END OF REPORT