

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: P908547

Luminaire Tested: DFN2DIP-PN3F0-080D030US840-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908547  
REPORT IS A COMBINATION OF REPORTS P901042 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-080D030US840-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

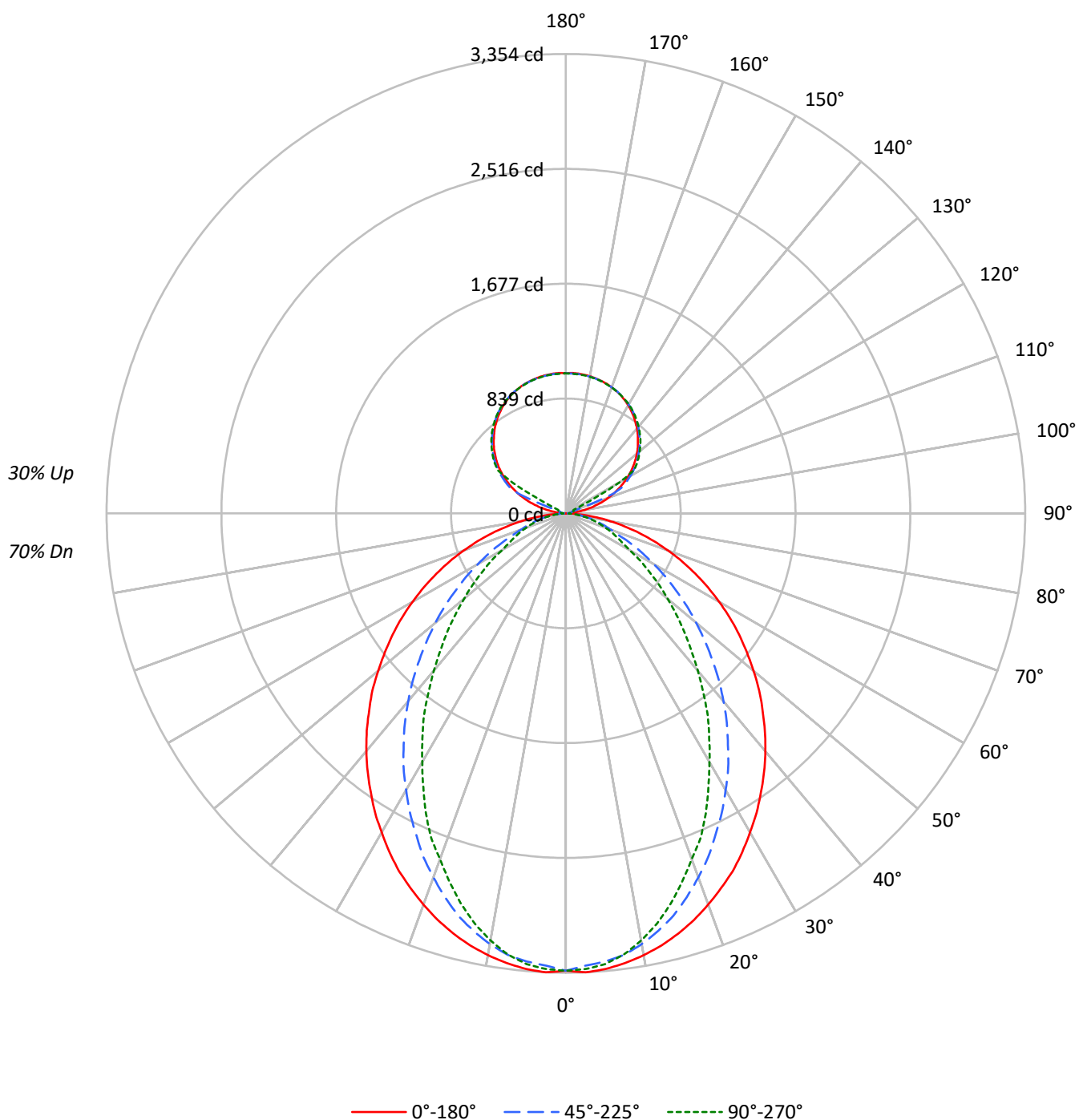
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9866.4 lumens  
Efficiency: N/A  
Efficacy: 95.6 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-Direct  
  
Input Watts (W): 103.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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   | 112 | 112 | 112 | 112 | 106 | 106 | 106 | 106 | 94 | 94 | 94 | 84 | 84 | 84 | 74 | 74 | 74 |
| 1   | 103 | 99  | 95  | 92  | 97  | 93  | 90  | 87  | 84 | 81 | 79 | 75 | 73 | 71 | 67 | 65 | 64 |
| 2   | 94  | 87  | 81  | 76  | 89  | 83  | 77  | 73  | 74 | 70 | 67 | 67 | 63 | 61 | 59 | 57 | 55 |
| 3   | 86  | 77  | 70  | 64  | 82  | 73  | 67  | 62  | 66 | 61 | 57 | 59 | 55 | 52 | 53 | 50 | 48 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 54 | 49 | 53 | 49 | 45 | 48 | 45 | 42 |
| 5   | 73  | 62  | 54  | 48  | 69  | 59  | 52  | 46  | 53 | 47 | 43 | 48 | 44 | 40 | 44 | 40 | 37 |
| 6   | 68  | 56  | 48  | 42  | 64  | 53  | 46  | 41  | 49 | 42 | 38 | 44 | 39 | 35 | 40 | 36 | 33 |
| 7   | 63  | 51  | 43  | 37  | 60  | 49  | 41  | 36  | 44 | 38 | 34 | 40 | 35 | 32 | 37 | 32 | 29 |
| 8   | 59  | 46  | 39  | 33  | 56  | 44  | 37  | 32  | 41 | 35 | 30 | 37 | 32 | 28 | 34 | 30 | 27 |
| 9   | 55  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 32 | 27 | 34 | 29 | 26 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 49  | 38  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 24 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3903 | 3903 | 3903 |
| 5°  | 3907 | 3839 | 3864 |
| 10° | 3866 | 3761 | 3737 |
| 15° | 3811 | 3634 | 3541 |
| 20° | 3738 | 3460 | 3301 |
| 25° | 3663 | 3265 | 3070 |
| 30° | 3564 | 3066 | 2776 |
| 35° | 3467 | 2852 | 2519 |
| 40° | 3368 | 2631 | 2224 |
| 45° | 3252 | 2387 | 1957 |
| 50° | 3133 | 2140 | 1696 |
| 55° | 3009 | 1876 | 1446 |
| 60° | 2864 | 1601 | 1188 |
| 65° | 2698 | 1322 | 1067 |
| 70° | 2496 | 1062 | 964  |
| 75° | 2242 | 930  | 873  |
| 80° | 1874 | 771  | 751  |
| 85° | 1274 | 502  | 555  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3252 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 312.9  | 3.2       |
| 10°-20°   | 859.1  | 8.7       |
| 20°-30°   | 1206.1 | 12.2      |
| 30°-40°   | 1314.7 | 13.3      |
| 40°-50°   | 1208.4 | 12.2      |
| 50°-60°   | 949.0  | 9.6       |
| 60°-70°   | 617.7  | 6.3       |
| 70°-80°   | 318.0  | 3.2       |
| 80°-90°   | 83.0   | 0.8       |
| 90°-100°  | 33.7   | 0.3       |
| 100°-110° | 125.7  | 1.3       |
| 110°-120° | 333.3  | 3.4       |
| 120°-130° | 552.9  | 5.6       |
| 130°-140° | 587.3  | 6.0       |
| 140°-150° | 545.8  | 5.5       |
| 150°-160° | 438.8  | 4.4       |
| 160°-170° | 282.8  | 2.9       |
| 170°-180° | 97.3   | 1.0       |
| 0°-30°    | 2378.1 | 24.1      |
| 0°-40°    | 3692.9 | 37.4      |
| 0°-60°    | 5850.2 | 59.3      |
| 0°-90°    | 6868.9 | 69.6      |
| 90°-120°  | 492.7  | 5.0       |
| 90°-150°  | 2178.7 | 22.1      |
| 90°-180°  | 2998.0 | 30.4      |
| 0°-180°   | 9866.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3339 | 3339  | 3339 | 3339  | 3339 |      |
| 5°   | 3339 | 3324  | 3284 | 3312  | 3303 | 317  |
| 15°  | 3176 | 3142  | 3040 | 2982  | 2952 | 895  |
| 25°  | 2883 | 2786  | 2587 | 2463  | 2417 | 1326 |
| 35°  | 2484 | 2330  | 2064 | 1874  | 1807 | 1555 |
| 45°  | 2031 | 1828  | 1511 | 1296  | 1224 | 1568 |
| 55°  | 1544 | 1308  | 982  | 801   | 744  | 1380 |
| 65°  | 1043 | 798   | 526  | 423   | 414  | 1034 |
| 75°  | 556  | 344   | 242  | 221   | 218  | 588  |
| 85°  | 130  | 66    | 57   | 57    | 57   | 149  |
| 90°  | 1    | 9     | 15   | 19    | 20   | 9    |
| 95°  | 48   | 24    | 29   | 33    | 32   | 57   |
| 105° | 225  | 247   | 45   | 53    | 56   | 240  |
| 115° | 425  | 438   | 456  | 114   | 61   | 419  |
| 125° | 602  | 611   | 625  | 630   | 633  | 536  |
| 135° | 744  | 756   | 763  | 770   | 769  | 575  |
| 145° | 863  | 863   | 875  | 880   | 877  | 540  |
| 155° | 951  | 944   | 953  | 957   | 952  | 438  |
| 165° | 1002 | 997   | 1000 | 1005  | 1000 | 283  |
| 175° | 1025 | 1020  | 1021 | 1026  | 1019 | 98   |
| 180° | 1022 | 1022  | 1022 | 1022  | 1022 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3339.0 | 3339.0 | 3339.0 | 3339.0 | 3339.0 |
| 2.5°   | 3354.1 | 3339.0 | 3305.7 | 3336.1 | 3330.0 |
| 5°     | 3339.0 | 3324.0 | 3284.5 | 3311.8 | 3302.8 |
| 7.5°   | 3311.8 | 3293.8 | 3251.5 | 3263.4 | 3248.2 |
| 10°    | 3275.5 | 3254.4 | 3194.1 | 3184.8 | 3166.8 |
| 12.5°  | 3230.4 | 3203.1 | 3121.3 | 3103.3 | 3070.0 |
| 15°    | 3175.8 | 3142.5 | 3039.9 | 2982.5 | 2952.3 |
| 17.5°  | 3112.3 | 3063.9 | 2937.0 | 2870.6 | 2822.2 |
| 20°    | 3039.9 | 2979.3 | 2828.3 | 2753.0 | 2686.2 |
| 22.5°  | 2961.3 | 2891.7 | 2716.4 | 2613.8 | 2568.6 |
| 25°    | 2882.8 | 2786.0 | 2586.6 | 2462.9 | 2417.3 |
| 27.5°  | 2789.1 | 2686.2 | 2465.7 | 2323.7 | 2254.1 |
| 30°    | 2689.5 | 2574.3 | 2332.7 | 2178.8 | 2097.0 |
| 32.5°  | 2592.6 | 2453.6 | 2206.1 | 2024.6 | 1948.9 |
| 35°    | 2484.0 | 2329.8 | 2064.0 | 1873.6 | 1806.9 |
| 37.5°  | 2378.1 | 2211.8 | 1931.0 | 1722.2 | 1646.9 |
| 40°    | 2266.3 | 2085.2 | 1791.8 | 1577.3 | 1498.7 |
| 42.5°  | 2151.5 | 1958.2 | 1652.9 | 1429.3 | 1353.8 |
| 45°    | 2030.6 | 1828.1 | 1511.0 | 1296.2 | 1223.8 |
| 47.5°  | 1915.9 | 1701.4 | 1375.0 | 1160.2 | 1093.9 |
| 50°    | 1788.9 | 1574.5 | 1242.0 | 1033.3 | 970.1  |
| 52.5°  | 1664.9 | 1438.1 | 1115.0 | 915.6  | 858.3  |
| 55°    | 1544.0 | 1308.4 | 982.0  | 800.8  | 743.5  |
| 57.5°  | 1420.3 | 1178.5 | 864.3  | 695.1  | 646.6  |
| 60°    | 1293.2 | 1051.6 | 740.2  | 586.3  | 538.0  |
| 62.5°  | 1169.5 | 927.8  | 634.5  | 489.6  | 465.5  |
| 65°    | 1042.6 | 797.6  | 525.7  | 423.2  | 413.8  |
| 67.5°  | 921.7  | 676.8  | 423.2  | 371.5  | 362.6  |
| 70°    | 794.8  | 559.2  | 350.4  | 320.2  | 308.1  |
| 72.5°  | 673.9  | 450.1  | 293.1  | 269.0  | 262.9  |
| 75°    | 555.9  | 344.4  | 241.8  | 220.6  | 217.7  |
| 77.5°  | 438.3  | 244.6  | 190.5  | 178.2  | 172.2  |
| 80°    | 329.2  | 175.4  | 144.9  | 133.0  | 133.0  |
| 82.5°  | 229.5  | 118.0  | 99.7   | 93.6   | 93.6   |
| 85°    | 129.9  | 66.3   | 57.4   | 57.4   | 57.4   |
| 87.5°  | 48.4   | 24.0   | 24.0   | 21.2   | 21.2   |
| 90°    | 0.7    | 8.9    | 14.7   | 18.6   | 19.9   |
| 92.5°  | 18.6   | 15.6   | 17.8   | 19.3   | 19.9   |
| 95°    | 48.1   | 23.6   | 28.8   | 32.6   | 31.8   |
| 97.5°  | 86.5   | 26.0   | 37.7   | 40.0   | 40.7   |
| 100°   | 131.0  | 29.6   | 42.2   | 48.1   | 49.6   |
| 102.5° | 179.8  | 178.3  | 43.6   | 51.7   | 54.0   |
| 105°   | 224.9  | 247.1  | 45.1   | 53.2   | 56.2   |
| 107.5° | 277.4  | 295.9  | 46.7   | 54.7   | 57.8   |
| 110°   | 327.8  | 343.3  | 129.5  | 55.5   | 58.5   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 375.2  | 388.4  | 375.9  | 57.0   | 59.2   |
| 115°   | 425.4  | 438.0  | 456.5  | 113.9  | 60.7   |
| 117.5° | 469.1  | 483.8  | 496.4  | 390.6  | 196.8  |
| 120°   | 517.9  | 529.0  | 542.3  | 551.2  | 451.3  |
| 122.5° | 559.3  | 571.2  | 586.0  | 590.4  | 591.2  |
| 125°   | 601.5  | 611.1  | 625.2  | 630.4  | 632.6  |
| 127.5° | 640.0  | 650.3  | 661.5  | 668.8  | 669.5  |
| 130°   | 676.2  | 688.1  | 696.2  | 704.3  | 703.7  |
| 132.5° | 713.2  | 722.9  | 730.9  | 737.6  | 736.9  |
| 135°   | 744.3  | 756.2  | 762.8  | 770.2  | 768.7  |
| 137.5° | 776.8  | 785.7  | 793.1  | 800.5  | 798.3  |
| 140°   | 808.6  | 814.6  | 822.6  | 829.3  | 825.7  |
| 142.5° | 835.4  | 840.5  | 850.1  | 856.0  | 852.3  |
| 145°   | 863.4  | 862.6  | 875.3  | 880.4  | 876.7  |
| 147.5° | 887.8  | 885.6  | 898.2  | 901.8  | 898.9  |
| 150°   | 911.5  | 906.4  | 918.2  | 922.5  | 918.9  |
| 152.5° | 931.4  | 925.5  | 936.7  | 941.1  | 935.9  |
| 155°   | 950.7  | 944.1  | 952.9  | 957.4  | 951.5  |
| 157.5° | 966.2  | 960.4  | 967.0  | 972.2  | 966.2  |
| 160°   | 979.6  | 975.1  | 979.6  | 984.0  | 978.8  |
| 162.5° | 991.4  | 986.9  | 990.7  | 995.8  | 989.2  |
| 165°   | 1001.7 | 997.3  | 999.6  | 1004.7 | 999.6  |
| 167.5° | 1009.9 | 1005.4 | 1007.6 | 1012.9 | 1006.2 |
| 170°   | 1016.5 | 1012.1 | 1013.6 | 1018.8 | 1012.1 |
| 172.5° | 1021.0 | 1016.5 | 1018.0 | 1023.2 | 1016.5 |
| 175°   | 1024.6 | 1019.5 | 1021.0 | 1026.1 | 1018.8 |
| 177.5° | 1026.1 | 1021.0 | 1021.8 | 1026.9 | 1020.3 |
| 180°   | 1022.5 | 1022.5 | 1022.5 | 1022.5 | 1022.5 |

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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 | 13.50            | 14.52 | 14.28 | 15.32 | 16.28 | 9.47           | 10.49 | 10.24 | 11.28 | 12.25 |
|                 | 3H   | 15.19            | 16.10 | 15.98 | 16.90 | 17.90 | 10.67          | 11.58 | 11.45 | 12.38 | 13.38 |
|                 | 4H   | 15.80            | 16.66 | 16.61 | 17.47 | 18.48 | 11.12          | 11.98 | 11.93 | 12.79 | 13.80 |
|                 | 6H   | 16.23            | 17.02 | 17.05 | 17.84 | 18.86 | 11.45          | 12.24 | 12.26 | 13.06 | 14.08 |
|                 | 8H   | 16.36            | 17.11 | 17.19 | 17.95 | 18.97 | 11.54          | 12.29 | 12.37 | 13.13 | 14.15 |
|                 | 12H  | 16.42            | 17.14 | 17.26 | 17.97 | 19.02 | 11.59          | 12.30 | 12.42 | 13.14 | 14.18 |
| 4H              | 2H   | 13.54            | 14.40 | 14.35 | 15.21 | 16.22 | 10.08          | 10.94 | 10.89 | 11.76 | 12.76 |
|                 | 3H   | 15.38            | 16.10 | 16.20 | 16.94 | 17.96 | 11.44          | 12.16 | 12.27 | 13.00 | 14.02 |
|                 | 4H   | 16.08            | 16.73 | 16.91 | 17.57 | 18.62 | 11.99          | 12.64 | 12.83 | 13.49 | 14.54 |
|                 | 6H   | 16.60            | 17.16 | 17.45 | 18.02 | 19.08 | 12.42          | 12.98 | 13.27 | 13.84 | 14.90 |
|                 | 8H   | 16.77            | 17.29 | 17.63 | 18.16 | 19.22 | 12.55          | 13.07 | 13.40 | 13.93 | 15.00 |
|                 | 12H  | 16.87            | 17.34 | 17.75 | 18.22 | 19.30 | 12.62          | 13.09 | 13.49 | 13.97 | 15.04 |
| 8H              | 4H   | 16.06            | 16.58 | 16.91 | 17.44 | 18.51 | 12.29          | 12.81 | 13.14 | 13.67 | 14.74 |
|                 | 6H   | 16.62            | 17.06 | 17.51 | 17.96 | 19.03 | 12.80          | 13.23 | 13.68 | 14.14 | 15.20 |
|                 | 8H   | 16.84            | 17.22 | 17.73 | 18.12 | 19.20 | 12.99          | 13.37 | 13.88 | 14.27 | 15.35 |
|                 | 12H  | 16.98            | 17.32 | 17.87 | 18.21 | 19.34 | 13.11          | 13.45 | 14.01 | 14.34 | 15.48 |
| 12H             | 4H   | 16.02            | 16.49 | 16.89 | 17.37 | 18.44 | 12.30          | 12.77 | 13.17 | 13.65 | 14.72 |
|                 | 6H   | 16.60            | 16.98 | 17.49 | 17.88 | 18.96 | 12.85          | 13.23 | 13.74 | 14.13 | 15.22 |
|                 | 8H   | 16.82            | 17.16 | 17.72 | 18.05 | 19.19 | 13.06          | 13.40 | 13.96 | 14.29 | 15.43 |

END OF REPORT