

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: P902932

Luminaire Tested: DFN2DIP-PN2F0-060D030US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P902932  
REPORT IS A COMBINATION OF REPORTS P899479 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-060D030US830-FLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

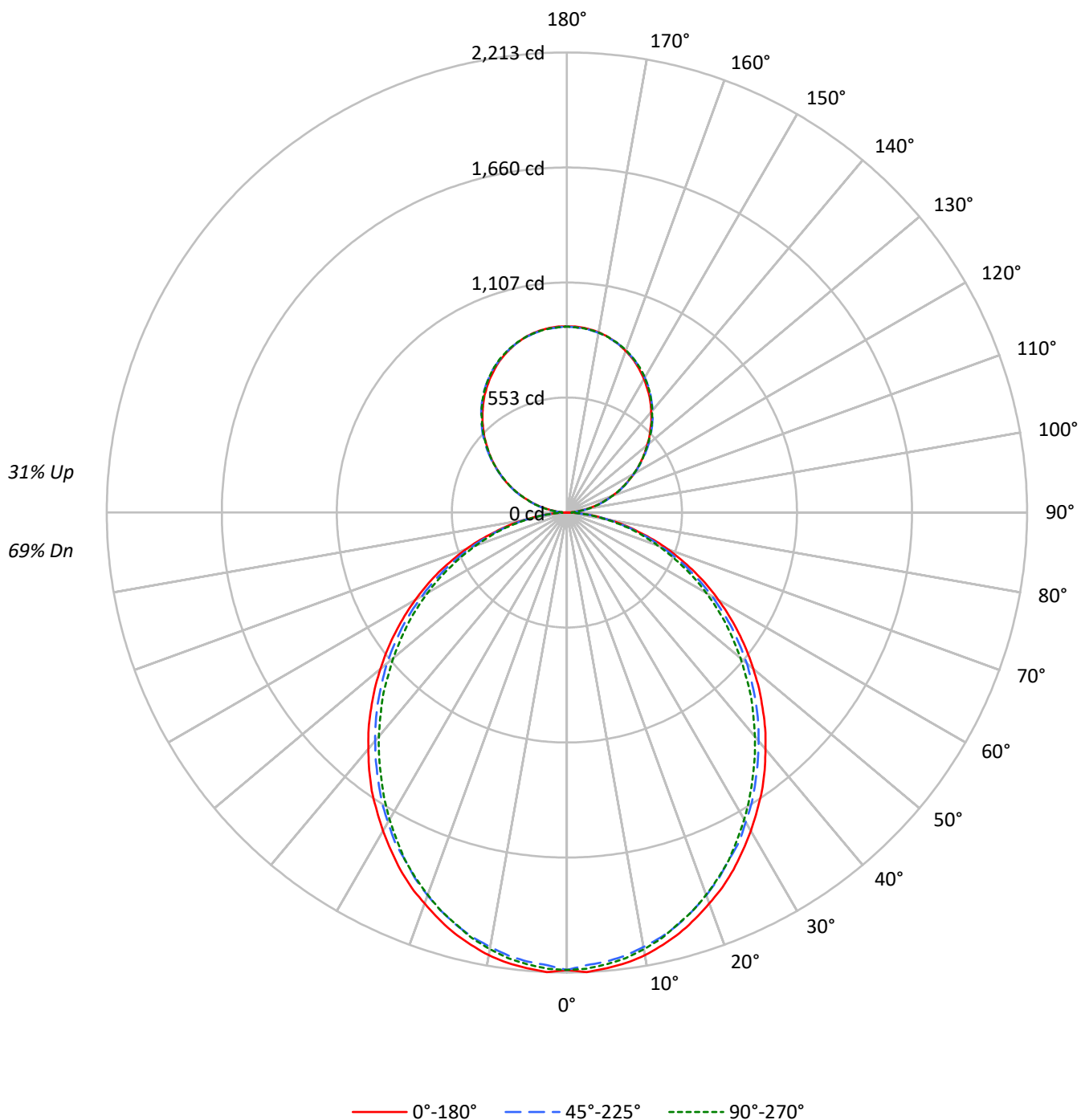
Lumens per Lamp: N/A  
Luminaire Lumens: 8101.2 lumens  
Efficiency: N/A  
Efficacy: 97.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 83.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P902932

CATALOG NUMBER: DFN2DIP-PN2F0-060D030US830-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P902932

CATALOG NUMBER: DFN2DIP-PN2F0-060D030US830-FLLFL

**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 | 83 | 83 | 83 | 74 | 74 | 74 |
| 1   | 102 | 98  | 94  | 90  | 96  | 92  | 89  | 86  | 83 | 80 | 77 | 74 | 71 | 70 | 65 | 64 | 62 |
| 2   | 93  | 85  | 79  | 74  | 88  | 81  | 75  | 70  | 72 | 68 | 64 | 65 | 61 | 58 | 57 | 55 | 52 |
| 3   | 85  | 75  | 67  | 61  | 80  | 71  | 64  | 59  | 64 | 58 | 54 | 57 | 53 | 49 | 51 | 48 | 45 |
| 4   | 78  | 67  | 58  | 52  | 73  | 63  | 56  | 50  | 57 | 51 | 46 | 51 | 46 | 42 | 46 | 42 | 39 |
| 5   | 71  | 59  | 51  | 45  | 67  | 56  | 49  | 43  | 51 | 45 | 40 | 46 | 41 | 37 | 41 | 37 | 34 |
| 6   | 66  | 53  | 45  | 39  | 62  | 51  | 43  | 38  | 46 | 40 | 35 | 41 | 36 | 32 | 37 | 33 | 30 |
| 7   | 61  | 48  | 40  | 34  | 58  | 46  | 39  | 33  | 42 | 35 | 31 | 38 | 33 | 29 | 34 | 30 | 26 |
| 8   | 57  | 44  | 36  | 31  | 54  | 42  | 35  | 30  | 38 | 32 | 28 | 35 | 29 | 26 | 31 | 27 | 24 |
| 9   | 53  | 40  | 33  | 27  | 50  | 39  | 31  | 26  | 35 | 29 | 25 | 32 | 27 | 23 | 29 | 25 | 21 |
| 10  | 50  | 37  | 30  | 25  | 47  | 36  | 29  | 24  | 32 | 27 | 22 | 30 | 25 | 21 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4766 | 4766 | 4766 |
| 5°  | 4766 | 4689 | 4724 |
| 10° | 4720 | 4616 | 4653 |
| 15° | 4642 | 4530 | 4546 |
| 20° | 4541 | 4414 | 4437 |
| 25° | 4440 | 4278 | 4312 |
| 30° | 4315 | 4150 | 4155 |
| 35° | 4196 | 4001 | 3989 |
| 40° | 4051 | 3851 | 3831 |
| 45° | 3906 | 3699 | 3668 |
| 50° | 3747 | 3540 | 3481 |
| 55° | 3580 | 3355 | 3307 |
| 60° | 3391 | 3139 | 3107 |
| 65° | 3183 | 2912 | 2873 |
| 70° | 2919 | 2635 | 2618 |
| 75° | 2556 | 2304 | 2373 |
| 80° | 2116 | 1882 | 1925 |
| 85° | 1435 | 1190 | 1207 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3906 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 207.1  | 2.6       |
| 10°-20°   | 582.7  | 7.2       |
| 20°-30°   | 856.4  | 10.6      |
| 30°-40°   | 994.6  | 12.3      |
| 40°-50°   | 993.4  | 12.3      |
| 50°-60°   | 866.2  | 10.7      |
| 60°-70°   | 640.3  | 7.9       |
| 70°-80°   | 362.3  | 4.5       |
| 80°-90°   | 98.2   | 1.2       |
| 90°-100°  | 55.3   | 0.7       |
| 100°-110° | 175.8  | 2.2       |
| 110°-120° | 300.9  | 3.7       |
| 120°-130° | 395.7  | 4.9       |
| 130°-140° | 444.2  | 5.5       |
| 140°-150° | 435.6  | 5.4       |
| 150°-160° | 365.4  | 4.5       |
| 160°-170° | 242.3  | 3.0       |
| 170°-180° | 84.7   | 1.0       |
| <hr/>     |        |           |
| 0°-30°    | 1646.2 | 20.3      |
| 0°-40°    | 2640.9 | 32.6      |
| 0°-60°    | 4500.5 | 55.6      |
| 0°-90°    | 5601.2 | 69.1      |
| 90°-120°  | 532.1  | 6.6       |
| 90°-150°  | 1807.5 | 22.3      |
| 90°-180°  | 2500.0 | 30.9      |
| 0°-180°   | 8101.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2200 | 2200  | 2200 | 2200  | 2200 |      |
| 5°   | 2200 | 2192  | 2169 | 2186  | 2182 | 209  |
| 15°  | 2095 | 2082  | 2055 | 2063  | 2053 | 590  |
| 25°  | 1896 | 1879  | 1843 | 1847  | 1843 | 872  |
| 35°  | 1636 | 1615  | 1581 | 1568  | 1557 | 1021 |
| 45°  | 1331 | 1316  | 1284 | 1261  | 1253 | 1027 |
| 55°  | 1007 | 994   | 969  | 944   | 933  | 901  |
| 65°  | 679  | 667   | 646  | 626   | 616  | 672  |
| 75°  | 355  | 351   | 340  | 328   | 332  | 379  |
| 85°  | 87   | 85    | 83   | 76    | 74   | 97   |
| 90°  | 1    | 10    | 26   | 25    | 26   | 8    |
| 95°  | 39   | 47    | 48   | 48    | 47   | 44   |
| 105° | 162  | 164   | 166  | 167   | 167  | 171  |
| 115° | 302  | 306   | 305  | 304   | 302  | 299  |
| 125° | 439  | 446   | 444  | 441   | 440  | 392  |
| 135° | 568  | 576   | 578  | 577   | 575  | 439  |
| 145° | 690  | 695   | 699  | 700   | 697  | 431  |
| 155° | 789  | 791   | 793  | 797   | 795  | 363  |
| 165° | 858  | 857   | 857  | 862   | 859  | 242  |
| 175° | 893  | 890   | 889  | 894   | 890  | 85   |
| 180° | 894  | 894   | 894  | 894   | 894  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2200.5 | 2200.5 | 2200.5 | 2200.5 | 2200.5 |
| 2.5°   | 2213.3 | 2202.7 | 2179.3 | 2200.5 | 2196.4 |
| 5°     | 2200.5 | 2192.2 | 2168.8 | 2185.7 | 2181.6 |
| 7.5°   | 2185.7 | 2173.1 | 2149.8 | 2166.8 | 2162.6 |
| 10°    | 2162.6 | 2147.8 | 2122.3 | 2139.2 | 2132.9 |
| 12.5°  | 2130.7 | 2118.1 | 2092.7 | 2103.3 | 2099.0 |
| 15°    | 2094.7 | 2082.2 | 2054.6 | 2063.1 | 2052.6 |
| 17.5°  | 2050.3 | 2037.8 | 2010.2 | 2020.6 | 2010.2 |
| 20°    | 2001.6 | 1989.0 | 1959.4 | 1965.7 | 1957.4 |
| 22.5°  | 1953.1 | 1934.0 | 1906.4 | 1906.4 | 1902.1 |
| 25°    | 1895.8 | 1879.1 | 1843.0 | 1847.1 | 1843.0 |
| 27.5°  | 1832.3 | 1817.5 | 1790.1 | 1783.9 | 1773.3 |
| 30°    | 1769.1 | 1751.9 | 1720.3 | 1714.0 | 1705.4 |
| 32.5°  | 1701.2 | 1688.7 | 1654.7 | 1641.9 | 1633.4 |
| 35°    | 1635.7 | 1614.6 | 1580.6 | 1567.8 | 1557.3 |
| 37.5°  | 1561.6 | 1542.5 | 1508.6 | 1493.7 | 1483.2 |
| 40°    | 1485.4 | 1468.4 | 1434.5 | 1415.7 | 1407.1 |
| 42.5°  | 1411.4 | 1394.3 | 1360.7 | 1339.4 | 1326.7 |
| 45°    | 1331.1 | 1316.2 | 1284.3 | 1261.2 | 1252.6 |
| 47.5°  | 1252.6 | 1237.8 | 1204.0 | 1180.6 | 1168.0 |
| 50°    | 1170.1 | 1159.5 | 1129.9 | 1100.2 | 1089.7 |
| 52.5°  | 1089.7 | 1074.9 | 1047.4 | 1024.2 | 1009.4 |
| 55°    | 1007.3 | 994.5  | 969.1  | 943.8  | 933.2  |
| 57.5°  | 924.7  | 914.2  | 886.6  | 861.2  | 852.6  |
| 60°    | 842.1  | 833.8  | 804.2  | 780.8  | 774.5  |
| 62.5°  | 761.7  | 746.9  | 725.8  | 704.6  | 696.2  |
| 65°    | 679.3  | 666.6  | 645.5  | 626.3  | 615.8  |
| 67.5°  | 594.6  | 583.9  | 565.1  | 550.3  | 541.7  |
| 70°    | 516.3  | 507.8  | 488.7  | 473.9  | 465.6  |
| 72.5°  | 435.9  | 427.4  | 416.9  | 402.1  | 395.8  |
| 75°    | 355.3  | 351.4  | 340.5  | 328.0  | 332.2  |
| 77.5°  | 283.5  | 275.0  | 270.7  | 264.5  | 258.2  |
| 80°    | 211.7  | 209.4  | 205.2  | 198.9  | 194.6  |
| 82.5°  | 143.9  | 143.9  | 141.9  | 133.4  | 133.4  |
| 85°    | 86.6   | 84.6   | 82.6   | 76.1   | 74.1   |
| 87.5°  | 38.2   | 33.9   | 29.6   | 23.4   | 21.1   |
| 90°    | 0.8    | 9.7    | 26.4   | 24.8   | 25.6   |
| 92.5°  | 16.7   | 22.6   | 23.5   | 24.2   | 24.2   |
| 95°    | 39.4   | 46.9   | 48.3   | 48.3   | 46.9   |
| 97.5°  | 65.5   | 72.5   | 75.5   | 75.5   | 75.5   |
| 100°   | 95.7   | 101.9  | 104.1  | 104.1  | 103.3  |
| 102.5° | 127.5  | 132.1  | 135.1  | 135.9  | 135.1  |
| 105°   | 162.3  | 164.5  | 166.1  | 167.4  | 167.4  |
| 107.5° | 196.8  | 200.0  | 200.0  | 200.6  | 196.8  |
| 110°   | 230.3  | 234.6  | 234.6  | 234.6  | 232.4  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 266.4 | 271.0 | 270.1 | 268.0 | 266.4 |
| 115°   | 302.0 | 306.2 | 304.9 | 304.2 | 302.0 |
| 117.5° | 337.2 | 343.2 | 339.4 | 337.2 | 335.1 |
| 120°   | 372.9 | 378.8 | 372.9 | 372.9 | 370.4 |
| 122.5° | 405.2 | 412.7 | 409.0 | 406.8 | 405.2 |
| 125°   | 439.2 | 445.9 | 443.7 | 441.3 | 440.5 |
| 127.5° | 472.3 | 480.7 | 477.8 | 474.5 | 472.3 |
| 130°   | 503.3 | 513.0 | 511.7 | 510.1 | 507.1 |
| 132.5° | 538.1 | 545.6 | 546.2 | 542.4 | 540.3 |
| 135°   | 568.1 | 576.4 | 578.1 | 577.2 | 575.0 |
| 137.5° | 601.4 | 608.2 | 609.5 | 609.1 | 605.8 |
| 140°   | 630.8 | 637.6 | 641.4 | 641.4 | 638.4 |
| 142.5° | 661.1 | 667.8 | 670.0 | 670.8 | 667.8 |
| 145°   | 689.7 | 695.0 | 699.4 | 700.1 | 697.2 |
| 147.5° | 715.3 | 722.0 | 725.2 | 726.6 | 723.6 |
| 150°   | 741.7 | 746.3 | 749.2 | 751.7 | 749.2 |
| 152.5° | 765.2 | 769.7 | 773.5 | 776.5 | 773.5 |
| 155°   | 788.6 | 790.7 | 793.1 | 796.9 | 794.6 |
| 157.5° | 808.8 | 810.4 | 811.8 | 817.2 | 813.4 |
| 160°   | 826.9 | 828.5 | 829.3 | 833.9 | 830.7 |
| 162.5° | 843.6 | 843.6 | 844.4 | 849.5 | 845.7 |
| 165°   | 857.9 | 857.1 | 857.1 | 862.4 | 858.7 |
| 167.5° | 870.8 | 868.4 | 868.4 | 873.7 | 870.0 |
| 170°   | 880.5 | 878.4 | 877.6 | 883.0 | 878.4 |
| 172.5° | 887.2 | 885.1 | 884.3 | 889.7 | 885.1 |
| 175°   | 892.7 | 890.5 | 888.9 | 894.3 | 889.7 |
| 177.5° | 895.6 | 893.4 | 891.8 | 896.5 | 891.8 |
| 180°   | 894.3 | 894.3 | 894.3 | 894.3 | 894.3 |

TEST NUMBER: P902932

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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 | 14.18            | 15.25 | 14.96 | 16.04 | 17.01 | 13.75          | 14.81 | 14.52 | 15.61 | 16.58 |
|                 | 3H   | 15.84            | 16.79 | 16.62 | 17.60 | 18.60 | 15.36          | 16.31 | 16.14 | 17.12 | 18.12 |
|                 | 4H   | 16.42            | 17.32 | 17.23 | 18.14 | 19.15 | 15.94          | 16.84 | 16.74 | 17.66 | 18.67 |
|                 | 6H   | 16.82            | 17.65 | 17.63 | 18.47 | 19.49 | 16.33          | 17.16 | 17.15 | 17.99 | 19.01 |
|                 | 8H   | 16.92            | 17.71 | 17.74 | 18.55 | 19.58 | 16.43          | 17.23 | 17.26 | 18.07 | 19.09 |
|                 | 12H  | 16.97            | 17.72 | 17.80 | 18.56 | 19.61 | 16.47          | 17.23 | 17.31 | 18.07 | 19.12 |
| 4H              | 2H   | 14.66            | 15.56 | 15.47 | 16.38 | 17.39 | 14.31          | 15.21 | 15.12 | 16.03 | 17.04 |
|                 | 3H   | 16.52            | 17.27 | 17.34 | 18.12 | 19.15 | 16.12          | 16.87 | 16.94 | 17.72 | 18.75 |
|                 | 4H   | 17.23            | 17.91 | 18.06 | 18.76 | 19.81 | 16.81          | 17.50 | 17.65 | 18.34 | 19.40 |
|                 | 6H   | 17.73            | 18.33 | 18.58 | 19.20 | 20.25 | 17.31          | 17.91 | 18.16 | 18.78 | 19.84 |
|                 | 8H   | 17.88            | 18.43 | 18.73 | 19.30 | 20.37 | 17.45          | 18.01 | 18.31 | 18.87 | 19.95 |
|                 | 12H  | 17.95            | 18.45 | 18.82 | 19.34 | 20.41 | 17.52          | 18.02 | 18.39 | 18.90 | 19.98 |
| 8H              | 4H   | 17.43            | 17.98 | 18.28 | 18.85 | 19.92 | 17.06          | 17.61 | 17.91 | 18.48 | 19.55 |
|                 | 6H   | 18.04            | 18.50 | 18.92 | 19.41 | 20.48 | 17.67          | 18.13 | 18.55 | 19.04 | 20.11 |
|                 | 8H   | 18.25            | 18.66 | 19.14 | 19.56 | 20.65 | 17.87          | 18.28 | 18.76 | 19.18 | 20.27 |
|                 | 12H  | 18.38            | 18.74 | 19.27 | 19.63 | 20.77 | 17.98          | 18.34 | 18.88 | 19.24 | 20.38 |
| 12H             | 4H   | 17.42            | 17.92 | 18.29 | 18.81 | 19.88 | 17.06          | 17.56 | 17.93 | 18.45 | 19.52 |
|                 | 6H   | 18.07            | 18.48 | 18.96 | 19.38 | 20.47 | 17.71          | 18.12 | 18.60 | 19.02 | 20.11 |
|                 | 8H   | 18.30            | 18.66 | 19.20 | 19.56 | 20.70 | 17.94          | 18.30 | 18.83 | 19.19 | 20.33 |

END OF REPORT