

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: P922218

Luminaire Tested: DFN2DIP-PN3F0-090D040US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922218  
REPORT IS A COMBINATION OF REPORTS P899538 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-090D040US940-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

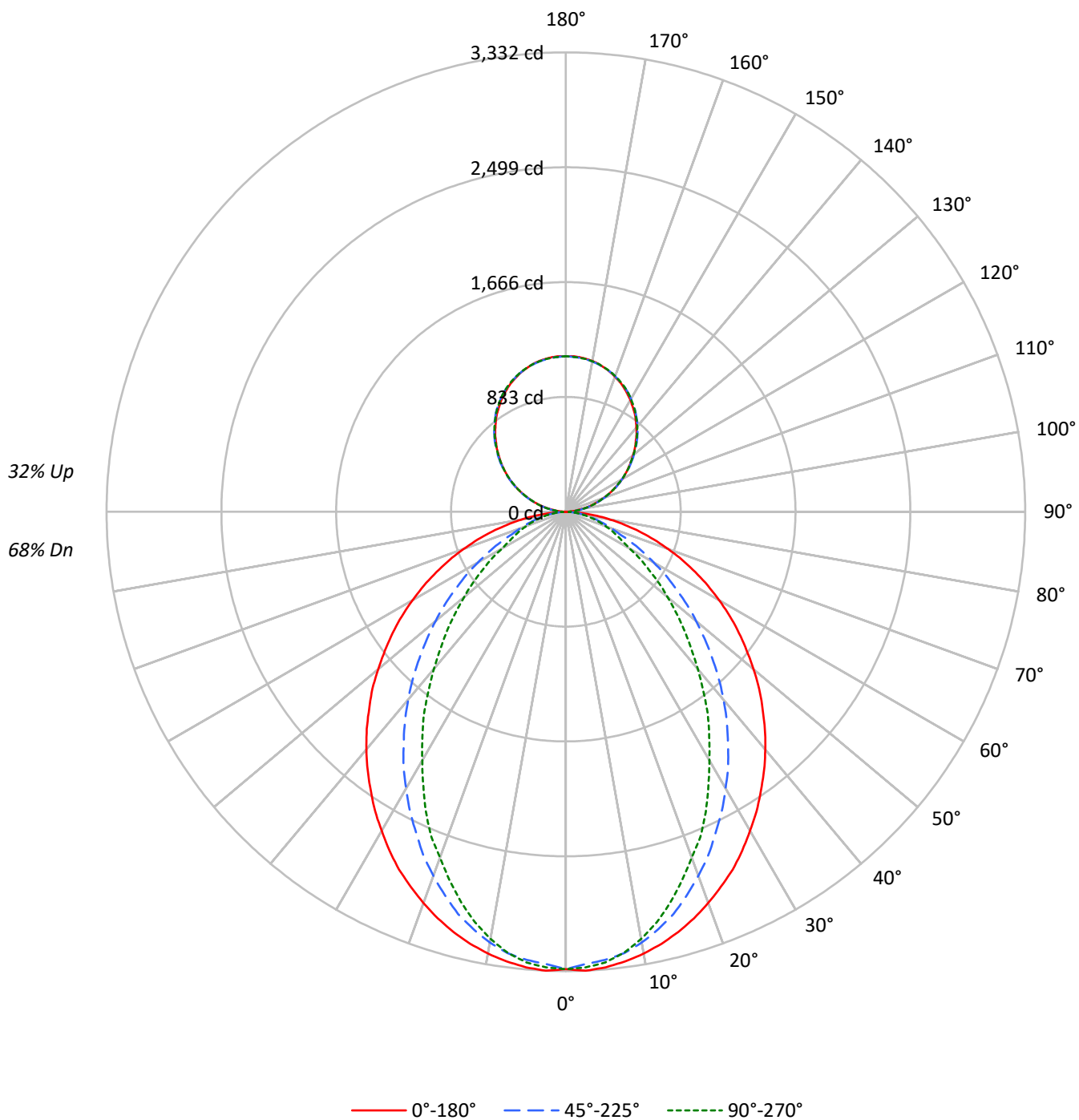
Lumens per Lamp: N/A  
Luminaire Lumens: 9978.3 lumens  
Efficiency: N/A  
Efficacy: 81.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 123  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
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



TEST NUMBER: P922218

CATALOG NUMBER: DFN2DIP-PN3F0-090D040US940-RLFL

**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 | 105 | 105 | 105 | 105 | 94 | 94 | 94 | 83 | 83 | 83 | 73 | 73 | 73 |
| 1   | 103 | 98  | 95  | 91  | 97  | 93  | 90  | 87  | 83 | 81 | 78 | 74 | 72 | 70 | 66 | 64 | 63 |
| 2   | 94  | 87  | 81  | 76  | 89  | 82  | 77  | 72  | 74 | 70 | 66 | 66 | 63 | 60 | 59 | 56 | 54 |
| 3   | 86  | 77  | 70  | 64  | 81  | 73  | 67  | 61  | 66 | 61 | 56 | 59 | 55 | 51 | 52 | 49 | 47 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 53 | 49 | 53 | 48 | 45 | 47 | 44 | 41 |
| 5   | 73  | 62  | 53  | 48  | 69  | 59  | 51  | 46  | 53 | 47 | 43 | 48 | 43 | 39 | 43 | 39 | 36 |
| 6   | 68  | 56  | 48  | 42  | 64  | 53  | 46  | 40  | 48 | 42 | 38 | 44 | 39 | 35 | 39 | 35 | 32 |
| 7   | 63  | 51  | 43  | 37  | 59  | 48  | 41  | 36  | 44 | 38 | 33 | 40 | 35 | 31 | 36 | 32 | 29 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 30 | 37 | 32 | 28 | 33 | 29 | 26 |
| 9   | 55  | 42  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 27 | 34 | 29 | 25 | 31 | 27 | 24 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 31  | 26  | 34 | 29 | 25 | 32 | 27 | 23 | 29 | 25 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3877 | 3877 | 3877 |
| 5°  | 3881 | 3813 | 3839 |
| 10° | 3841 | 3736 | 3712 |
| 15° | 3785 | 3610 | 3517 |
| 20° | 3713 | 3437 | 3279 |
| 25° | 3639 | 3244 | 3049 |
| 30° | 3541 | 3046 | 2758 |
| 35° | 3444 | 2833 | 2502 |
| 40° | 3345 | 2614 | 2209 |
| 45° | 3231 | 2371 | 1944 |
| 50° | 3113 | 2126 | 1685 |
| 55° | 2989 | 1864 | 1436 |
| 60° | 2845 | 1591 | 1180 |
| 65° | 2680 | 1313 | 1061 |
| 70° | 2479 | 1055 | 957  |
| 75° | 2227 | 924  | 867  |
| 80° | 1863 | 766  | 747  |
| 85° | 1264 | 499  | 551  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3231 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 310.9  | 3.1       |
| 10°-20°   | 853.4  | 8.6       |
| 20°-30°   | 1198.1 | 12.0      |
| 30°-40°   | 1306.0 | 13.1      |
| 40°-50°   | 1200.4 | 12.0      |
| 50°-60°   | 942.7  | 9.4       |
| 60°-70°   | 613.6  | 6.1       |
| 70°-80°   | 315.9  | 3.2       |
| 80°-90°   | 83.8   | 0.8       |
| 90°-100°  | 69.8   | 0.7       |
| 100°-110° | 221.8  | 2.2       |
| 110°-120° | 379.5  | 3.8       |
| 120°-130° | 499.2  | 5.0       |
| 130°-140° | 560.3  | 5.6       |
| 140°-150° | 549.4  | 5.5       |
| 150°-160° | 460.9  | 4.6       |
| 160°-170° | 305.7  | 3.1       |
| 170°-180° | 106.8  | 1.1       |
| 0°-30°    | 2362.4 | 23.7      |
| 0°-40°    | 3668.4 | 36.8      |
| 0°-60°    | 5811.5 | 58.2      |
| 0°-90°    | 6824.8 | 68.4      |
| 90°-120°  | 671.2  | 6.7       |
| 90°-150°  | 2280.1 | 22.9      |
| 90°-180°  | 3153.0 | 31.6      |
| 0°-180°   | 9978.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3317 | 3317  | 3317 | 3317  | 3317 |      |
| 5°   | 3317 | 3302  | 3263 | 3290  | 3281 | 315  |
| 15°  | 3155 | 3122  | 3020 | 2963  | 2933 | 889  |
| 25°  | 2864 | 2768  | 2570 | 2446  | 2401 | 1317 |
| 35°  | 2468 | 2314  | 2050 | 1861  | 1795 | 1544 |
| 45°  | 2017 | 1816  | 1501 | 1288  | 1216 | 1558 |
| 55°  | 1534 | 1300  | 975  | 796   | 738  | 1371 |
| 65°  | 1036 | 792   | 522  | 420   | 411  | 1027 |
| 75°  | 552  | 342   | 240  | 219   | 216  | 584  |
| 85°  | 129  | 66    | 57   | 57    | 57   | 148  |
| 90°  | 1    | 12    | 33   | 31    | 32   | 10   |
| 95°  | 50   | 59    | 61   | 61    | 59   | 55   |
| 105° | 205  | 207   | 210  | 211   | 211  | 216  |
| 115° | 381  | 386   | 385  | 384   | 381  | 377  |
| 125° | 554  | 562   | 560  | 557   | 556  | 495  |
| 135° | 717  | 727   | 729  | 728   | 725  | 554  |
| 145° | 870  | 877   | 882  | 883   | 880  | 544  |
| 155° | 995  | 998   | 1000 | 1005  | 1002 | 458  |
| 165° | 1082 | 1081  | 1081 | 1088  | 1083 | 305  |
| 175° | 1126 | 1123  | 1121 | 1128  | 1122 | 107  |
| 180° | 1128 | 1128  | 1128 | 1128  | 1128 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3316.9 | 3316.9 | 3316.9 | 3316.9 | 3316.9 |
| 2.5°   | 3331.9 | 3316.9 | 3283.7 | 3314.0 | 3308.0 |
| 5°     | 3316.9 | 3301.9 | 3262.8 | 3289.8 | 3280.9 |
| 7.5°   | 3289.8 | 3272.0 | 3230.0 | 3241.7 | 3226.7 |
| 10°    | 3253.9 | 3232.8 | 3173.0 | 3163.7 | 3145.9 |
| 12.5°  | 3208.9 | 3181.9 | 3100.7 | 3082.8 | 3049.6 |
| 15°    | 3154.8 | 3121.7 | 3019.8 | 2962.7 | 2932.8 |
| 17.5°  | 3091.7 | 3043.7 | 2917.5 | 2851.6 | 2803.5 |
| 20°    | 3019.8 | 2959.6 | 2809.5 | 2734.7 | 2668.4 |
| 22.5°  | 2941.8 | 2872.6 | 2698.4 | 2596.5 | 2551.6 |
| 25°    | 2863.7 | 2767.5 | 2569.5 | 2446.5 | 2401.3 |
| 27.5°  | 2770.7 | 2668.4 | 2449.4 | 2308.3 | 2239.2 |
| 30°    | 2671.7 | 2557.3 | 2317.2 | 2164.4 | 2083.1 |
| 32.5°  | 2575.4 | 2437.2 | 2191.4 | 2011.2 | 1936.0 |
| 35°    | 2467.5 | 2314.3 | 2050.3 | 1861.2 | 1794.9 |
| 37.5°  | 2362.4 | 2197.2 | 1918.2 | 1710.8 | 1636.0 |
| 40°    | 2251.3 | 2071.4 | 1779.9 | 1566.9 | 1488.9 |
| 42.5°  | 2137.3 | 1945.3 | 1642.0 | 1419.8 | 1344.9 |
| 45°    | 2017.2 | 1816.0 | 1500.9 | 1287.5 | 1215.6 |
| 47.5°  | 1903.2 | 1690.1 | 1365.9 | 1152.5 | 1086.6 |
| 50°    | 1777.1 | 1564.0 | 1233.8 | 1026.4 | 963.7  |
| 52.5°  | 1653.9 | 1428.7 | 1107.7 | 909.5  | 852.6  |
| 55°    | 1533.7 | 1299.7 | 975.4  | 795.6  | 738.5  |
| 57.5°  | 1410.9 | 1170.7 | 858.6  | 690.5  | 642.4  |
| 60°    | 1284.7 | 1044.5 | 735.4  | 582.5  | 534.4  |
| 62.5°  | 1161.8 | 921.7  | 630.3  | 486.3  | 462.4  |
| 65°    | 1035.6 | 792.4  | 522.3  | 420.4  | 411.2  |
| 67.5°  | 915.6  | 672.3  | 420.4  | 369.1  | 360.2  |
| 70°    | 789.5  | 555.4  | 348.1  | 318.2  | 306.0  |
| 72.5°  | 669.4  | 447.1  | 291.1  | 267.2  | 261.2  |
| 75°    | 552.2  | 342.1  | 240.1  | 219.1  | 216.2  |
| 77.5°  | 435.3  | 243.0  | 189.1  | 177.1  | 171.0  |
| 80°    | 327.1  | 174.2  | 143.9  | 132.2  | 132.2  |
| 82.5°  | 228.0  | 117.2  | 99.1   | 93.0   | 93.0   |
| 85°    | 128.9  | 65.9   | 57.0   | 57.0   | 57.0   |
| 87.5°  | 48.1   | 23.9   | 23.9   | 21.0   | 21.0   |
| 90°    | 1.0    | 12.2   | 33.3   | 31.3   | 32.3   |
| 92.5°  | 21.0   | 28.5   | 29.6   | 30.6   | 30.6   |
| 95°    | 49.7   | 59.2   | 60.9   | 60.9   | 59.2   |
| 97.5°  | 82.7   | 91.5   | 95.2   | 95.2   | 95.2   |
| 100°   | 120.7  | 128.6  | 131.3  | 131.3  | 130.3  |
| 102.5° | 160.9  | 166.7  | 170.4  | 171.4  | 170.4  |
| 105°   | 204.7  | 207.4  | 209.5  | 211.2  | 211.2  |
| 107.5° | 248.3  | 252.4  | 252.4  | 253.0  | 248.3  |
| 110°   | 290.4  | 295.9  | 295.9  | 295.9  | 293.2  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 336.0  | 341.8  | 340.7  | 338.0  | 336.0  |
| 115°   | 380.8  | 386.4  | 384.6  | 383.6  | 380.8  |
| 117.5° | 425.4  | 432.9  | 428.2  | 425.4  | 422.8  |
| 120°   | 470.4  | 477.8  | 470.4  | 470.4  | 467.3  |
| 122.5° | 511.1  | 520.7  | 515.9  | 513.2  | 511.1  |
| 125°   | 554.0  | 562.5  | 559.8  | 556.7  | 555.7  |
| 127.5° | 595.8  | 606.4  | 602.6  | 598.5  | 595.8  |
| 130°   | 634.9  | 647.2  | 645.5  | 643.5  | 639.7  |
| 132.5° | 678.8  | 688.3  | 689.0  | 684.2  | 681.5  |
| 135°   | 716.6  | 727.1  | 729.2  | 728.1  | 725.4  |
| 137.5° | 758.8  | 767.2  | 768.9  | 768.2  | 764.2  |
| 140°   | 795.8  | 804.3  | 809.0  | 809.0  | 805.3  |
| 142.5° | 833.9  | 842.4  | 845.1  | 846.1  | 842.4  |
| 145°   | 870.0  | 876.7  | 882.2  | 883.2  | 879.5  |
| 147.5° | 902.2  | 910.7  | 914.8  | 916.5  | 912.8  |
| 150°   | 935.6  | 941.4  | 945.1  | 948.2  | 945.1  |
| 152.5° | 965.2  | 970.9  | 975.7  | 979.5  | 975.7  |
| 155°   | 994.7  | 997.5  | 1000.5 | 1005.3 | 1002.2 |
| 157.5° | 1020.3 | 1022.3 | 1024.0 | 1030.8 | 1026.0 |
| 160°   | 1043.0 | 1045.1 | 1046.1 | 1051.9 | 1047.8 |
| 162.5° | 1064.1 | 1064.1 | 1065.1 | 1071.6 | 1066.8 |
| 165°   | 1082.2 | 1081.1 | 1081.1 | 1087.9 | 1083.2 |
| 167.5° | 1098.5 | 1095.4 | 1095.4 | 1102.2 | 1097.4 |
| 170°   | 1110.7 | 1108.0 | 1107.0 | 1113.7 | 1108.0 |
| 172.5° | 1119.2 | 1116.5 | 1115.4 | 1122.3 | 1116.5 |
| 175°   | 1126.1 | 1123.3 | 1121.2 | 1128.0 | 1122.3 |
| 177.5° | 1129.8 | 1127.0 | 1125.0 | 1130.8 | 1125.0 |
| 180°   | 1128.0 | 1128.0 | 1128.0 | 1128.0 | 1128.0 |

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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 | 13.38            | 14.39 | 14.17 | 15.20 | 16.18 | 9.35           | 10.36 | 10.14 | 11.16 | 12.15 |
|                 | 3H   | 15.07            | 15.97 | 15.87 | 16.78 | 17.80 | 10.55          | 11.45 | 11.35 | 12.26 | 13.28 |
|                 | 4H   | 15.68            | 16.53 | 16.50 | 17.35 | 18.38 | 11.00          | 11.85 | 11.82 | 12.67 | 13.70 |
|                 | 6H   | 16.11            | 16.89 | 16.94 | 17.72 | 18.76 | 11.32          | 12.11 | 12.16 | 12.94 | 13.98 |
|                 | 8H   | 16.23            | 16.98 | 17.08 | 17.83 | 18.87 | 11.42          | 12.16 | 12.26 | 13.01 | 14.05 |
|                 | 12H  | 16.30            | 17.01 | 17.15 | 17.85 | 18.92 | 11.46          | 12.17 | 12.31 | 13.02 | 14.08 |
| 4H              | 2H   | 13.42            | 14.27 | 14.24 | 15.09 | 16.12 | 9.96           | 10.81 | 10.79 | 11.64 | 12.66 |
|                 | 3H   | 15.26            | 15.96 | 16.09 | 16.82 | 17.86 | 11.32          | 12.03 | 12.16 | 12.88 | 13.93 |
|                 | 4H   | 15.95            | 16.59 | 16.80 | 17.45 | 18.52 | 11.87          | 12.51 | 12.72 | 13.37 | 14.44 |
|                 | 6H   | 16.47            | 17.02 | 17.34 | 17.90 | 18.98 | 12.29          | 12.85 | 13.16 | 13.73 | 14.80 |
|                 | 8H   | 16.65            | 17.16 | 17.51 | 18.04 | 19.12 | 12.42          | 12.94 | 13.29 | 13.81 | 14.90 |
|                 | 12H  | 16.75            | 17.21 | 17.63 | 18.11 | 19.20 | 12.49          | 12.96 | 13.38 | 13.85 | 14.94 |
| 8H              | 4H   | 15.93            | 16.45 | 16.80 | 17.32 | 18.41 | 12.16          | 12.68 | 13.03 | 13.55 | 14.64 |
|                 | 6H   | 16.50            | 16.92 | 17.39 | 17.84 | 18.93 | 12.68          | 13.10 | 13.57 | 14.02 | 15.11 |
|                 | 8H   | 16.71            | 17.09 | 17.62 | 18.00 | 19.10 | 12.86          | 13.24 | 13.77 | 14.15 | 15.26 |
|                 | 12H  | 16.85            | 17.19 | 17.76 | 18.09 | 19.24 | 12.99          | 13.32 | 13.89 | 14.22 | 15.38 |
| 12H             | 4H   | 15.89            | 16.36 | 16.78 | 17.25 | 18.34 | 12.17          | 12.64 | 13.06 | 13.53 | 14.62 |
|                 | 6H   | 16.47            | 16.85 | 17.38 | 17.76 | 18.87 | 12.73          | 13.10 | 13.63 | 14.01 | 15.12 |
|                 | 8H   | 16.70            | 17.03 | 17.60 | 17.93 | 19.09 | 12.94          | 13.27 | 13.85 | 14.17 | 15.33 |

END OF REPORT