

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: P922049

Luminaire Tested: DFN2DIP-PN3F0-030D040US940-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922049  
REPORT IS A COMBINATION OF REPORTS P901045 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-030D040US940-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

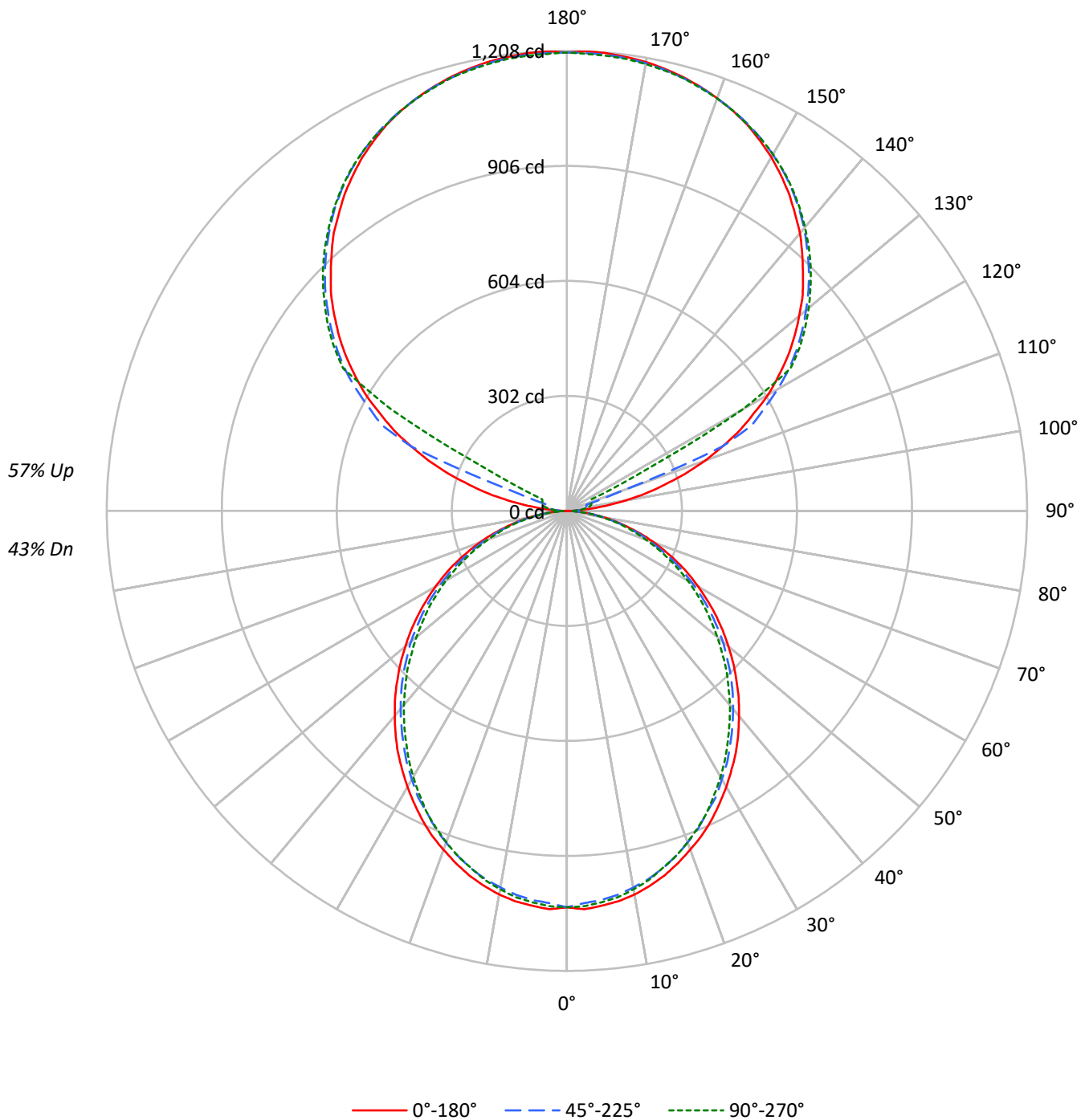
Lumens per Lamp: N/A  
Luminaire Lumens: 6179.5 lumens  
Efficiency: N/A  
Efficacy: 114.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 53.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 50 | 50 | 50 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 74 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 39 | 37 | 35 |
| 3   | 80  | 71  | 63  | 58  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 38 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 31 | 28 | 26 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 28 | 25 | 23 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 32  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1217 | 1217 | 1217 |
| 5°  | 1218 | 1199 | 1207 |
| 10° | 1207 | 1182 | 1191 |
| 15° | 1189 | 1162 | 1164 |
| 20° | 1164 | 1134 | 1138 |
| 25° | 1140 | 1101 | 1107 |
| 30° | 1109 | 1070 | 1068 |
| 35° | 1080 | 1033 | 1027 |
| 40° | 1044 | 997  | 988  |
| 45° | 1008 | 960  | 947  |
| 50° | 969  | 921  | 901  |
| 55° | 929  | 876  | 858  |
| 60° | 882  | 823  | 809  |
| 65° | 832  | 768  | 751  |
| 70° | 767  | 700  | 689  |
| 75° | 678  | 620  | 630  |
| 80° | 570  | 516  | 520  |
| 85° | 402  | 342  | 339  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1008 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 98.0   | 1.6       |
| 10°-20°   | 275.6  | 4.5       |
| 20°-30°   | 405.1  | 6.6       |
| 30°-40°   | 470.5  | 7.6       |
| 40°-50°   | 469.9  | 7.6       |
| 50°-60°   | 409.8  | 6.6       |
| 60°-70°   | 302.9  | 4.9       |
| 70°-80°   | 171.4  | 2.8       |
| 80°-90°   | 47.3   | 0.8       |
| 90°-100°  | 39.7   | 0.6       |
| 100°-110° | 148.0  | 2.4       |
| 110°-120° | 392.4  | 6.4       |
| 120°-130° | 650.9  | 10.5      |
| 130°-140° | 691.4  | 11.2      |
| 140°-150° | 642.6  | 10.4      |
| 150°-160° | 516.6  | 8.4       |
| 160°-170° | 332.9  | 5.4       |
| 170°-180° | 114.6  | 1.9       |
| 0°-30°    | 778.7  | 12.6      |
| 0°-40°    | 1249.2 | 20.2      |
| 0°-60°    | 2128.9 | 34.5      |
| 0°-90°    | 2650.5 | 42.9      |
| 90°-120°  | 580.1  | 9.4       |
| 90°-150°  | 2565.0 | 41.5      |
| 90°-180°  | 3529.0 | 57.1      |
| 0°-180°   | 6179.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1041 | 1041  | 1041 | 1041  | 1041 |      |
| 5°   | 1041 | 1037  | 1026 | 1034  | 1032 | 99   |
| 15°  | 991  | 985   | 972  | 976   | 971  | 279  |
| 25°  | 897  | 889   | 872  | 874   | 872  | 413  |
| 35°  | 774  | 764   | 748  | 742   | 737  | 483  |
| 45°  | 630  | 623   | 608  | 597   | 592  | 486  |
| 55°  | 476  | 470   | 458  | 446   | 442  | 426  |
| 65°  | 321  | 315   | 305  | 296   | 291  | 318  |
| 75°  | 168  | 166   | 161  | 155   | 157  | 179  |
| 85°  | 41   | 40    | 39   | 36    | 35   | 46   |
| 90°  | 1    | 10    | 17   | 22    | 24   | 6    |
| 95°  | 56   | 28    | 34   | 38    | 38   | 67   |
| 105° | 265  | 291   | 53   | 63    | 66   | 283  |
| 115° | 501  | 516   | 537  | 134   | 72   | 493  |
| 125° | 708  | 720   | 736  | 742   | 745  | 632  |
| 135° | 876  | 890   | 898  | 907   | 905  | 677  |
| 145° | 1016 | 1016  | 1030 | 1036  | 1032 | 636  |
| 155° | 1119 | 1112  | 1122 | 1127  | 1120 | 516  |
| 165° | 1179 | 1174  | 1177 | 1183  | 1177 | 333  |
| 175° | 1206 | 1200  | 1202 | 1208  | 1199 | 115  |
| 180° | 1204 | 1204  | 1204 | 1204  | 1204 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1040.9 | 1040.9 | 1040.9 | 1040.9 | 1040.9 |
| 2.5°   | 1047.0 | 1042.0 | 1030.9 | 1040.9 | 1039.0 |
| 5°     | 1040.9 | 1037.0 | 1025.9 | 1033.9 | 1032.0 |
| 7.5°   | 1033.9 | 1028.0 | 1016.9 | 1025.0 | 1023.0 |
| 10°    | 1023.0 | 1015.9 | 1004.0 | 1011.9 | 1009.0 |
| 12.5°  | 1007.9 | 1001.9 | 990.0  | 994.9  | 992.9  |
| 15°    | 990.9  | 985.0  | 971.9  | 975.9  | 970.9  |
| 17.5°  | 969.8  | 963.9  | 950.8  | 955.8  | 950.8  |
| 20°    | 946.8  | 940.8  | 926.8  | 929.8  | 925.9  |
| 22.5°  | 923.9  | 914.9  | 901.8  | 901.8  | 899.7  |
| 25°    | 896.8  | 888.9  | 871.8  | 873.8  | 871.8  |
| 27.5°  | 866.7  | 859.7  | 846.8  | 843.8  | 838.8  |
| 30°    | 836.8  | 828.8  | 813.8  | 810.7  | 806.7  |
| 32.5°  | 804.8  | 798.8  | 782.7  | 776.7  | 772.7  |
| 35°    | 773.7  | 763.7  | 747.7  | 741.6  | 736.6  |
| 37.5°  | 738.7  | 729.7  | 713.6  | 706.6  | 701.6  |
| 40°    | 702.7  | 694.6  | 678.6  | 669.7  | 665.7  |
| 42.5°  | 667.6  | 659.6  | 643.6  | 633.6  | 627.6  |
| 45°    | 629.6  | 622.6  | 607.5  | 596.6  | 592.5  |
| 47.5°  | 592.5  | 585.6  | 569.5  | 558.5  | 552.5  |
| 50°    | 553.5  | 548.5  | 534.5  | 520.5  | 515.5  |
| 52.5°  | 515.5  | 508.5  | 495.5  | 484.5  | 477.4  |
| 55°    | 476.5  | 470.5  | 458.4  | 446.5  | 441.5  |
| 57.5°  | 437.4  | 432.4  | 419.4  | 407.3  | 403.3  |
| 60°    | 398.3  | 394.4  | 380.4  | 369.3  | 366.4  |
| 62.5°  | 360.3  | 353.3  | 343.3  | 333.3  | 329.3  |
| 65°    | 321.4  | 315.3  | 305.3  | 296.3  | 291.3  |
| 67.5°  | 281.3  | 276.3  | 267.2  | 260.3  | 256.3  |
| 70°    | 244.2  | 240.2  | 231.2  | 224.2  | 220.3  |
| 72.5°  | 206.3  | 202.2  | 197.2  | 190.2  | 187.3  |
| 75°    | 168.1  | 166.2  | 161.1  | 155.2  | 157.2  |
| 77.5°  | 134.1  | 130.1  | 128.0  | 125.1  | 122.2  |
| 80°    | 100.1  | 99.1   | 97.0   | 94.1   | 92.1   |
| 82.5°  | 68.0   | 68.0   | 67.1   | 63.0   | 63.0   |
| 85°    | 41.0   | 40.0   | 39.1   | 36.0   | 35.0   |
| 87.5°  | 18.0   | 16.1   | 14.0   | 11.1   | 10.0   |
| 90°    | 0.8    | 10.4   | 17.4   | 21.8   | 23.5   |
| 92.5°  | 21.8   | 18.3   | 20.9   | 22.6   | 23.5   |
| 95°    | 56.5   | 27.8   | 33.9   | 38.3   | 37.5   |
| 97.5°  | 101.9  | 30.5   | 44.4   | 47.1   | 47.9   |
| 100°   | 154.2  | 34.9   | 49.7   | 56.5   | 58.3   |
| 102.5° | 211.6  | 210.0  | 51.4   | 60.9   | 63.6   |
| 105°   | 264.7  | 291.0  | 53.1   | 62.7   | 66.2   |
| 107.5° | 326.6  | 348.4  | 54.9   | 64.5   | 67.9   |
| 110°   | 385.9  | 404.1  | 152.5  | 65.4   | 68.8   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 441.7  | 457.3  | 442.5  | 67.1   | 69.7   |
| 115°   | 500.8  | 515.6  | 537.4  | 134.1  | 71.5   |
| 117.5° | 552.2  | 569.6  | 584.5  | 459.9  | 231.7  |
| 120°   | 609.8  | 622.8  | 638.5  | 649.0  | 531.4  |
| 122.5° | 658.4  | 672.4  | 689.9  | 695.1  | 696.0  |
| 125°   | 708.1  | 719.5  | 736.0  | 742.2  | 744.8  |
| 127.5° | 753.4  | 765.6  | 778.7  | 787.5  | 788.3  |
| 130°   | 796.1  | 810.1  | 819.6  | 829.2  | 828.4  |
| 132.5° | 839.6  | 851.0  | 860.6  | 868.4  | 867.6  |
| 135°   | 876.3  | 890.3  | 898.0  | 906.8  | 905.1  |
| 137.5° | 914.5  | 925.0  | 933.8  | 942.4  | 939.9  |
| 140°   | 952.0  | 959.0  | 968.6  | 976.4  | 972.1  |
| 142.5° | 983.5  | 989.5  | 1000.9 | 1007.7 | 1003.4 |
| 145°   | 1016.5 | 1015.7 | 1030.4 | 1036.5 | 1032.2 |
| 147.5° | 1045.2 | 1042.6 | 1057.4 | 1061.8 | 1058.4 |
| 150°   | 1073.1 | 1067.0 | 1081.0 | 1086.2 | 1081.8 |
| 152.5° | 1096.6 | 1089.7 | 1102.7 | 1108.0 | 1101.9 |
| 155°   | 1119.3 | 1111.5 | 1121.9 | 1127.1 | 1120.2 |
| 157.5° | 1137.6 | 1130.6 | 1138.5 | 1144.6 | 1137.6 |
| 160°   | 1153.2 | 1148.0 | 1153.2 | 1158.4 | 1152.4 |
| 162.5° | 1167.2 | 1162.0 | 1166.4 | 1172.4 | 1164.6 |
| 165°   | 1179.4 | 1174.2 | 1176.8 | 1182.9 | 1176.8 |
| 167.5° | 1189.0 | 1183.7 | 1186.4 | 1192.5 | 1184.6 |
| 170°   | 1196.9 | 1191.6 | 1193.3 | 1199.4 | 1191.6 |
| 172.5° | 1202.0 | 1196.9 | 1198.6 | 1204.7 | 1196.9 |
| 175°   | 1206.3 | 1200.2 | 1202.0 | 1208.1 | 1199.4 |
| 177.5° | 1208.1 | 1202.0 | 1202.9 | 1209.1 | 1201.2 |
| 180°   | 1203.8 | 1203.8 | 1203.8 | 1203.8 | 1203.8 |

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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 | 7.22             | 8.02  | 8.24  | 9.05  | 10.41 | 6.78           | 7.58  | 7.80  | 8.61  | 9.98  |
|                 | 3H   | 8.87             | 9.59  | 9.90  | 10.62 | 12.01 | 8.39           | 9.10  | 9.41  | 10.14 | 11.53 |
|                 | 4H   | 9.45             | 10.13 | 10.49 | 11.17 | 12.56 | 8.97           | 9.65  | 10.00 | 10.68 | 12.08 |
|                 | 6H   | 9.84             | 10.47 | 10.89 | 11.51 | 12.92 | 9.35           | 9.98  | 10.40 | 11.02 | 12.43 |
|                 | 8H   | 9.94             | 10.54 | 11.00 | 11.60 | 13.00 | 9.45           | 10.05 | 10.51 | 11.11 | 12.51 |
|                 | 12H  | 9.99             | 10.55 | 11.05 | 11.60 | 13.03 | 9.49           | 10.06 | 10.55 | 11.11 | 12.54 |
| 4H              | 2H   | 7.67             | 8.35  | 8.72  | 9.39  | 10.78 | 7.32           | 8.00  | 8.36  | 9.04  | 10.43 |
|                 | 3H   | 9.52             | 10.09 | 10.58 | 11.16 | 12.57 | 9.12           | 9.69  | 10.18 | 10.75 | 12.16 |
|                 | 4H   | 10.23            | 10.75 | 11.29 | 11.81 | 13.24 | 9.81           | 10.34 | 10.87 | 11.39 | 12.82 |
|                 | 6H   | 10.74            | 11.18 | 11.81 | 12.26 | 13.69 | 10.31          | 10.76 | 11.38 | 11.84 | 13.27 |
|                 | 8H   | 10.88            | 11.30 | 11.95 | 12.37 | 13.81 | 10.46          | 10.87 | 11.52 | 11.94 | 13.39 |
|                 | 12H  | 10.95            | 11.33 | 12.04 | 12.41 | 13.86 | 10.51          | 10.89 | 11.60 | 11.97 | 13.42 |
| 8H              | 4H   | 10.42            | 10.84 | 11.49 | 11.91 | 13.35 | 10.05          | 10.47 | 11.12 | 11.54 | 12.98 |
|                 | 6H   | 11.04            | 11.38 | 12.13 | 12.50 | 13.94 | 10.66          | 11.01 | 11.76 | 12.12 | 13.56 |
|                 | 8H   | 11.25            | 11.56 | 12.35 | 12.65 | 14.11 | 10.87          | 11.18 | 11.97 | 12.27 | 13.73 |
|                 | 12H  | 11.38            | 11.65 | 12.48 | 12.74 | 14.24 | 10.98          | 11.25 | 12.08 | 12.34 | 13.84 |
| 12H             | 4H   | 10.40            | 10.78 | 11.49 | 11.86 | 13.31 | 10.04          | 10.42 | 11.13 | 11.50 | 12.95 |
|                 | 6H   | 11.07            | 11.37 | 12.17 | 12.47 | 13.93 | 10.70          | 11.01 | 11.80 | 12.10 | 13.56 |
|                 | 8H   | 11.30            | 11.57 | 12.40 | 12.66 | 14.16 | 10.93          | 11.20 | 12.03 | 12.29 | 13.79 |

END OF REPORT