

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: P913869

Luminaire Tested: DFN2DIP-PN3F0-030D050US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913869  
REPORT IS A COMBINATION OF REPORTS P901059 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-030D050US927-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

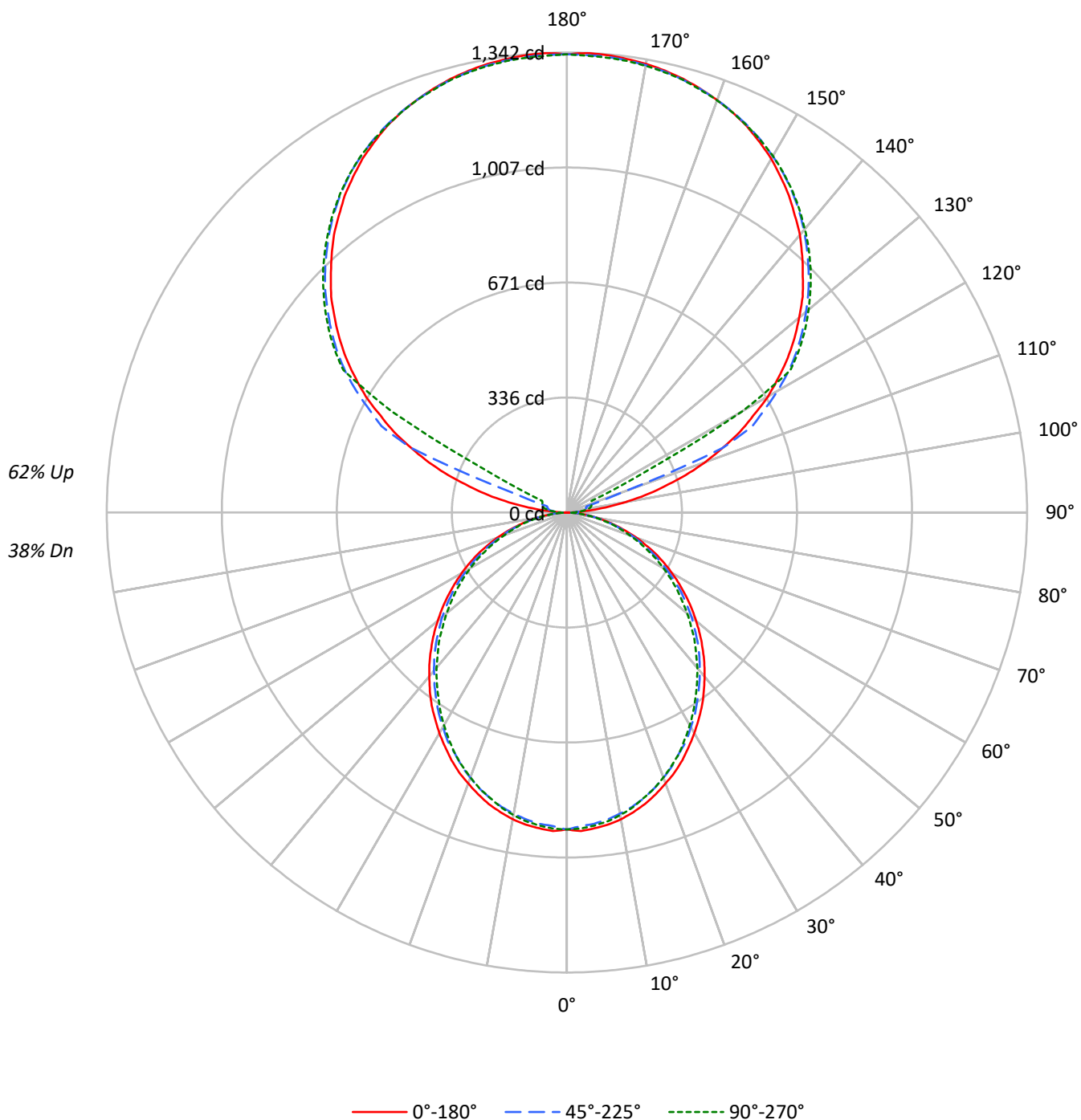
Lumens per Lamp: N/A  
Luminaire Lumens: 6274.1 lumens  
Efficiency: N/A  
Efficacy: 101.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 61.6  
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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 60 | 60 | 60 | 45 | 45 | 45 |
| 1   | 95  | 91  | 87  | 83  | 86 | 82 | 79 | 76 | 67 | 65 | 63 | 53 | 51 | 50 | 39 | 39 | 38 |
| 2   | 86  | 79  | 73  | 68  | 78 | 72 | 67 | 63 | 59 | 55 | 52 | 46 | 44 | 42 | 35 | 33 | 32 |
| 3   | 79  | 70  | 62  | 57  | 71 | 63 | 57 | 52 | 52 | 47 | 44 | 41 | 38 | 35 | 31 | 29 | 27 |
| 4   | 72  | 62  | 54  | 48  | 65 | 56 | 49 | 44 | 46 | 41 | 37 | 36 | 33 | 30 | 27 | 25 | 23 |
| 5   | 66  | 55  | 47  | 41  | 60 | 50 | 43 | 38 | 41 | 36 | 32 | 33 | 29 | 26 | 25 | 22 | 20 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 37 | 32 | 28 | 29 | 26 | 23 | 22 | 20 | 18 |
| 7   | 56  | 44  | 36  | 31  | 51 | 40 | 34 | 29 | 33 | 28 | 24 | 27 | 23 | 20 | 20 | 18 | 16 |
| 8   | 52  | 40  | 32  | 27  | 47 | 37 | 30 | 25 | 30 | 25 | 22 | 24 | 21 | 18 | 19 | 16 | 14 |
| 9   | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 28 | 23 | 19 | 22 | 19 | 16 | 17 | 15 | 13 |
| 10  | 45  | 33  | 26  | 22  | 41 | 31 | 24 | 20 | 26 | 21 | 17 | 21 | 17 | 14 | 16 | 13 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1081 | 1081 | 1081 |
| 5°  | 1082 | 1065 | 1073 |
| 10° | 1073 | 1050 | 1058 |
| 15° | 1056 | 1032 | 1034 |
| 20° | 1034 | 1007 | 1011 |
| 25° | 1012 | 978  | 983  |
| 30° | 985  | 950  | 949  |
| 35° | 959  | 918  | 912  |
| 40° | 928  | 885  | 878  |
| 45° | 896  | 852  | 842  |
| 50° | 861  | 818  | 801  |
| 55° | 825  | 778  | 763  |
| 60° | 784  | 731  | 719  |
| 65° | 739  | 682  | 667  |
| 70° | 682  | 622  | 612  |
| 75° | 602  | 551  | 560  |
| 80° | 507  | 459  | 462  |
| 85° | 357  | 304  | 301  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 903 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 87.0   | 1.4       |
| 10°-20°   | 244.9  | 3.9       |
| 20°-30°   | 359.9  | 5.7       |
| 30°-40°   | 418.0  | 6.7       |
| 40°-50°   | 417.5  | 6.7       |
| 50°-60°   | 364.0  | 5.8       |
| 60°-70°   | 269.1  | 4.3       |
| 70°-80°   | 152.3  | 2.4       |
| 80°-90°   | 42.5   | 0.7       |
| 90°-100°  | 44.1   | 0.7       |
| 100°-110° | 164.3  | 2.6       |
| 110°-120° | 435.8  | 6.9       |
| 120°-130° | 722.8  | 11.5      |
| 130°-140° | 767.8  | 12.2      |
| 140°-150° | 713.6  | 11.4      |
| 150°-160° | 573.7  | 9.1       |
| 160°-170° | 369.7  | 5.9       |
| 170°-180° | 127.2  | 2.0       |
| 0°-30°    | 691.8  | 11.0      |
| 0°-40°    | 1109.8 | 17.7      |
| 0°-60°    | 1891.3 | 30.1      |
| 0°-90°    | 2355.1 | 37.5      |
| 90°-120°  | 644.2  | 10.3      |
| 90°-150°  | 2848.4 | 45.4      |
| 90°-180°  | 3919.0 | 62.5      |
| 0°-180°   | 6274.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 925  | 925   | 925  | 925   | 925  |      |
| 5°   | 925  | 921   | 911  | 918   | 917  | 88   |
| 15°  | 880  | 875   | 863  | 867   | 862  | 248  |
| 25°  | 797  | 790   | 774  | 776   | 774  | 367  |
| 35°  | 687  | 678   | 664  | 659   | 654  | 429  |
| 45°  | 559  | 553   | 540  | 530   | 526  | 432  |
| 55°  | 423  | 418   | 407  | 397   | 392  | 378  |
| 65°  | 286  | 280   | 271  | 263   | 259  | 282  |
| 75°  | 149  | 148   | 143  | 138   | 140  | 159  |
| 85°  | 36   | 36    | 35   | 32    | 31   | 41   |
| 90°  | 1    | 12    | 19   | 24    | 26   | 6    |
| 95°  | 63   | 31    | 38   | 43    | 42   | 74   |
| 105° | 294  | 323   | 59   | 70    | 74   | 314  |
| 115° | 556  | 573   | 597  | 149   | 79   | 548  |
| 125° | 786  | 799   | 817  | 824   | 827  | 701  |
| 135° | 973  | 989   | 997  | 1007  | 1005 | 752  |
| 145° | 1129 | 1128  | 1144 | 1151  | 1146 | 706  |
| 155° | 1243 | 1234  | 1246 | 1252  | 1244 | 573  |
| 165° | 1310 | 1304  | 1307 | 1314  | 1307 | 370  |
| 175° | 1340 | 1333  | 1335 | 1342  | 1332 | 127  |
| 180° | 1337 | 1337  | 1337 | 1337  | 1337 |      |

TEST NUMBER: P913869

CATALOG NUMBER: DFN2DIP-PN3F0-030D050US927-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 924.7 | 924.7 | 924.7 | 924.7 | 924.7 |
| 2.5°   | 930.1 | 925.7 | 915.8 | 924.7 | 923.0 |
| 5°     | 924.7 | 921.2 | 911.4 | 918.5 | 916.8 |
| 7.5°   | 918.5 | 913.2 | 903.4 | 910.6 | 908.8 |
| 10°    | 908.8 | 902.5 | 891.9 | 899.0 | 896.4 |
| 12.5°  | 895.4 | 890.1 | 879.5 | 883.8 | 882.1 |
| 15°    | 880.3 | 875.0 | 863.4 | 867.0 | 862.5 |
| 17.5°  | 861.6 | 856.3 | 844.7 | 849.1 | 844.7 |
| 20°    | 841.1 | 835.8 | 823.4 | 826.0 | 822.5 |
| 22.5°  | 820.8 | 812.8 | 801.1 | 801.1 | 799.3 |
| 25°    | 796.7 | 789.6 | 774.5 | 776.3 | 774.5 |
| 27.5°  | 770.0 | 763.7 | 752.3 | 749.6 | 745.2 |
| 30°    | 743.4 | 736.3 | 722.9 | 720.3 | 716.7 |
| 32.5°  | 714.9 | 709.6 | 695.4 | 690.0 | 686.4 |
| 35°    | 687.4 | 678.5 | 664.2 | 658.9 | 654.4 |
| 37.5°  | 656.2 | 648.2 | 634.0 | 627.7 | 623.3 |
| 40°    | 624.2 | 617.1 | 602.8 | 594.9 | 591.4 |
| 42.5°  | 593.1 | 586.0 | 571.8 | 562.8 | 557.5 |
| 45°    | 559.4 | 553.1 | 539.7 | 530.0 | 526.4 |
| 47.5°  | 526.4 | 520.2 | 506.0 | 496.1 | 490.8 |
| 50°    | 491.7 | 487.3 | 474.8 | 462.4 | 458.0 |
| 52.5°  | 458.0 | 451.7 | 440.2 | 430.4 | 424.1 |
| 55°    | 423.3 | 418.0 | 407.3 | 396.6 | 392.2 |
| 57.5°  | 388.6 | 384.1 | 372.6 | 361.9 | 358.3 |
| 60°    | 353.9 | 350.4 | 337.9 | 328.1 | 325.5 |
| 62.5°  | 320.1 | 313.9 | 305.0 | 296.1 | 292.6 |
| 65°    | 285.5 | 280.1 | 271.2 | 263.2 | 258.8 |
| 67.5°  | 249.9 | 245.4 | 237.4 | 231.2 | 227.7 |
| 70°    | 217.0 | 213.4 | 205.4 | 199.2 | 195.7 |
| 72.5°  | 183.2 | 179.6 | 175.2 | 169.0 | 166.4 |
| 75°    | 149.3 | 147.7 | 143.1 | 137.8 | 139.7 |
| 77.5°  | 119.1 | 115.6 | 113.8 | 111.1 | 108.5 |
| 80°    | 89.0  | 88.0  | 86.2  | 83.6  | 81.8  |
| 82.5°  | 60.4  | 60.4  | 59.7  | 56.0  | 56.0  |
| 85°    | 36.4  | 35.6  | 34.7  | 32.0  | 31.1  |
| 87.5°  | 16.0  | 14.3  | 12.4  | 9.8   | 8.9   |
| 90°    | 1.0   | 11.6  | 19.3  | 24.2  | 26.1  |
| 92.5°  | 24.2  | 20.4  | 23.2  | 25.2  | 26.1  |
| 95°    | 62.8  | 30.9  | 37.7  | 42.6  | 41.6  |
| 97.5°  | 113.1 | 33.9  | 49.3  | 52.3  | 53.2  |
| 100°   | 171.3 | 38.7  | 55.1  | 62.8  | 64.8  |
| 102.5° | 235.0 | 233.1 | 57.1  | 67.7  | 70.7  |
| 105°   | 294.1 | 323.1 | 59.0  | 69.6  | 73.5  |
| 107.5° | 362.7 | 386.8 | 61.0  | 71.5  | 75.5  |
| 110°   | 428.6 | 448.8 | 169.3 | 72.6  | 76.4  |

TEST NUMBER: P913869

CATALOG NUMBER: DFN2DIP-PN3F0-030D050US927-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 490.4  | 507.8  | 491.4  | 74.5   | 77.4   |
| 115°   | 556.2  | 572.6  | 596.8  | 149.0  | 79.4   |
| 117.5° | 613.2  | 632.6  | 649.1  | 510.6  | 257.3  |
| 120°   | 677.1  | 691.6  | 709.0  | 720.6  | 590.0  |
| 122.5° | 731.2  | 746.7  | 766.1  | 771.9  | 772.9  |
| 125°   | 786.3  | 799.0  | 817.4  | 824.1  | 827.0  |
| 127.5° | 836.6  | 850.2  | 864.8  | 874.4  | 875.4  |
| 130°   | 884.1  | 899.6  | 910.1  | 920.8  | 920.0  |
| 132.5° | 932.5  | 945.1  | 955.6  | 964.4  | 963.5  |
| 135°   | 973.1  | 988.6  | 997.2  | 1007.0 | 1005.0 |
| 137.5° | 1015.6 | 1027.2 | 1037.0 | 1046.6 | 1043.8 |
| 140°   | 1057.2 | 1065.0 | 1075.5 | 1084.3 | 1079.5 |
| 142.5° | 1092.1 | 1098.9 | 1111.4 | 1119.1 | 1114.3 |
| 145°   | 1128.9 | 1127.8 | 1144.2 | 1151.0 | 1146.2 |
| 147.5° | 1160.7 | 1157.8 | 1174.3 | 1179.1 | 1175.3 |
| 150°   | 1191.7 | 1184.9 | 1200.4 | 1206.2 | 1201.3 |
| 152.5° | 1217.7 | 1210.1 | 1224.6 | 1230.4 | 1223.6 |
| 155°   | 1242.9 | 1234.3 | 1245.9 | 1251.6 | 1244.0 |
| 157.5° | 1263.2 | 1255.5 | 1264.2 | 1271.1 | 1263.2 |
| 160°   | 1280.7 | 1274.9 | 1280.7 | 1286.4 | 1279.7 |
| 162.5° | 1296.1 | 1290.4 | 1295.1 | 1301.9 | 1293.2 |
| 165°   | 1309.6 | 1303.9 | 1306.8 | 1313.5 | 1306.8 |
| 167.5° | 1320.3 | 1314.5 | 1317.5 | 1324.2 | 1315.5 |
| 170°   | 1329.0 | 1323.2 | 1325.2 | 1331.9 | 1323.2 |
| 172.5° | 1334.8 | 1329.0 | 1331.0 | 1337.8 | 1329.0 |
| 175°   | 1339.7 | 1332.8 | 1334.8 | 1341.6 | 1331.9 |
| 177.5° | 1341.6 | 1334.8 | 1335.9 | 1342.6 | 1333.9 |
| 180°   | 1336.7 | 1336.7 | 1336.7 | 1336.7 | 1336.7 |

TEST NUMBER: P913869

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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 | 6.23             | 6.99  | 7.28  | 8.05  | 9.49  | 5.79           | 6.55  | 6.85  | 7.61  | 9.05  |
|                 | 3H   | 7.87             | 8.55  | 8.94  | 9.62  | 11.08 | 7.39           | 8.07  | 8.46  | 9.14  | 10.60 |
|                 | 4H   | 8.45             | 9.10  | 9.53  | 10.17 | 11.63 | 7.97           | 8.61  | 9.05  | 9.69  | 11.15 |
|                 | 6H   | 8.84             | 9.44  | 9.93  | 10.51 | 11.99 | 8.35           | 8.95  | 9.44  | 10.02 | 11.50 |
|                 | 8H   | 8.94             | 9.51  | 10.03 | 10.60 | 12.07 | 8.45           | 9.02  | 9.54  | 10.11 | 11.58 |
|                 | 12H  | 8.98             | 9.52  | 10.08 | 10.61 | 12.10 | 8.49           | 9.03  | 9.58  | 10.11 | 11.60 |
| 4H              | 2H   | 6.67             | 7.32  | 7.76  | 8.39  | 9.85  | 6.32           | 6.97  | 7.41  | 8.04  | 9.50  |
|                 | 3H   | 8.52             | 9.06  | 9.61  | 10.16 | 11.64 | 8.12           | 8.66  | 9.21  | 9.76  | 11.24 |
|                 | 4H   | 9.23             | 9.72  | 10.33 | 10.81 | 12.31 | 8.81           | 9.31  | 9.91  | 10.40 | 11.89 |
|                 | 6H   | 9.73             | 10.16 | 10.84 | 11.27 | 12.76 | 9.31           | 9.73  | 10.41 | 10.85 | 12.34 |
|                 | 8H   | 9.88             | 10.27 | 10.98 | 11.38 | 12.88 | 9.45           | 9.85  | 10.55 | 10.95 | 12.46 |
|                 | 12H  | 9.94             | 10.30 | 11.06 | 11.42 | 12.93 | 9.50           | 9.86  | 10.63 | 10.98 | 12.49 |
| 8H              | 4H   | 9.41             | 9.81  | 10.52 | 10.91 | 12.42 | 9.04           | 9.44  | 10.15 | 10.54 | 12.05 |
|                 | 6H   | 10.03            | 10.36 | 11.16 | 11.50 | 13.01 | 9.66           | 9.98  | 10.78 | 11.13 | 12.63 |
|                 | 8H   | 10.25            | 10.53 | 11.38 | 11.66 | 13.18 | 9.86           | 10.15 | 11.00 | 11.28 | 12.80 |
|                 | 12H  | 10.37            | 10.62 | 11.51 | 11.74 | 13.30 | 9.97           | 10.22 | 11.11 | 11.35 | 12.91 |
| 12H             | 4H   | 9.39             | 9.75  | 10.51 | 10.87 | 12.38 | 9.03           | 9.39  | 10.15 | 10.51 | 12.02 |
|                 | 6H   | 10.06            | 10.35 | 11.19 | 11.47 | 13.00 | 9.70           | 9.98  | 10.83 | 11.11 | 12.63 |
|                 | 8H   | 10.29            | 10.54 | 11.43 | 11.67 | 13.23 | 9.92           | 10.17 | 11.06 | 11.30 | 12.86 |

END OF REPORT