

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: P920942

Luminaire Tested: DFN2DIP-TR4F0-040D120US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920942  
REPORT IS A COMBINATION OF REPORTS P900513 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-040D120US935-FLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

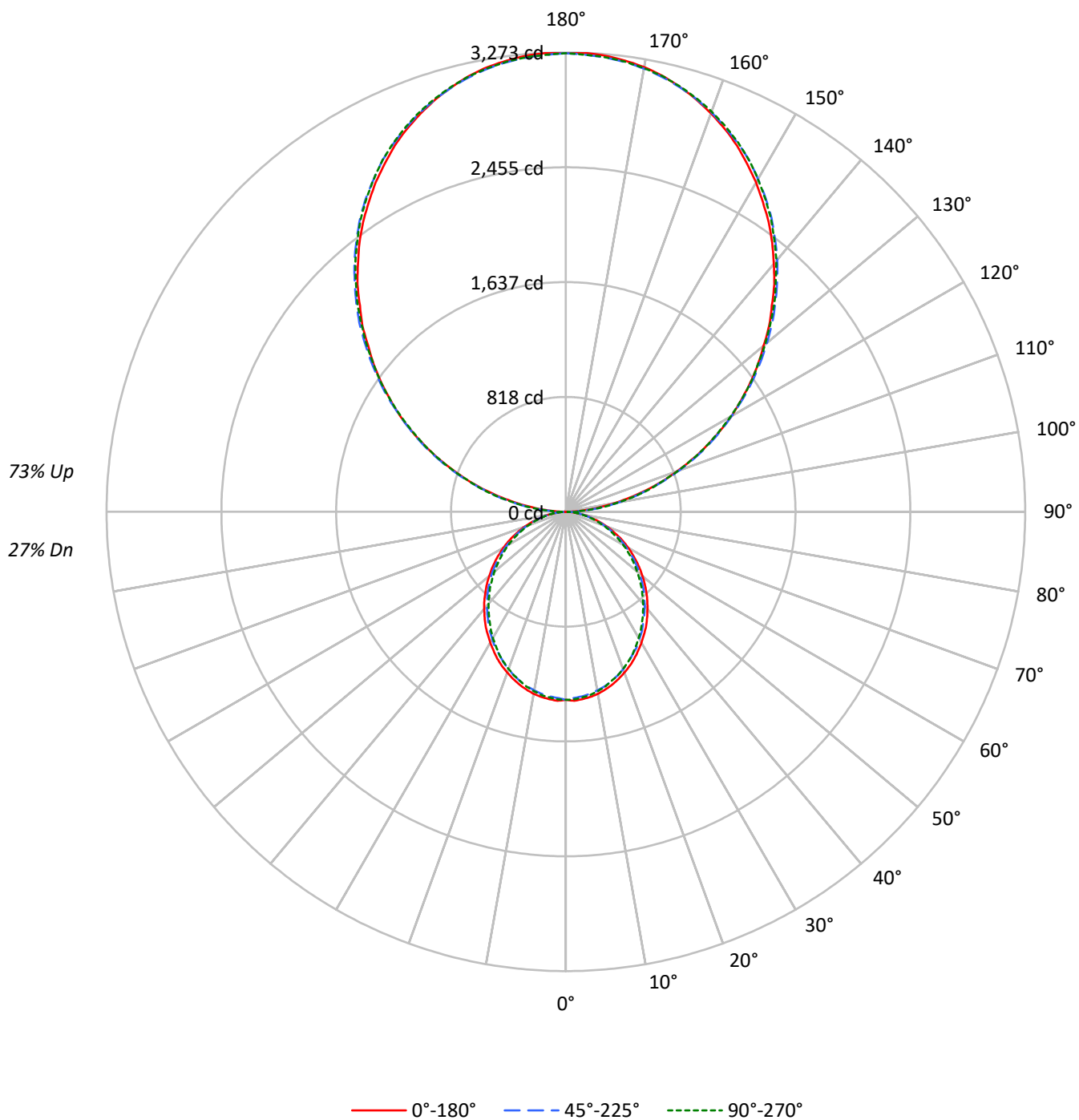
Lumens per Lamp: N/A  
Luminaire Lumens: 12553.3 lumens  
Efficiency: N/A  
Efficacy: 101.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 123.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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: P920942

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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   | 102 | 102 | 102 | 102 | 91 | 91 | 91 | 91 | 71 | 71 | 71 | 52 | 52 | 52 | 35 | 35 | 35 |
| 1   | 93  | 88  | 85  | 81  | 83 | 79 | 76 | 73 | 62 | 60 | 58 | 46 | 44 | 43 | 31 | 30 | 30 |
| 2   | 84  | 77  | 71  | 66  | 75 | 69 | 64 | 60 | 54 | 51 | 48 | 40 | 38 | 36 | 27 | 26 | 25 |
| 3   | 77  | 68  | 61  | 55  | 68 | 61 | 55 | 50 | 48 | 44 | 40 | 35 | 33 | 30 | 24 | 23 | 21 |
| 4   | 70  | 60  | 52  | 47  | 62 | 54 | 47 | 42 | 42 | 38 | 34 | 32 | 29 | 26 | 22 | 20 | 18 |
| 5   | 64  | 53  | 45  | 40  | 57 | 48 | 41 | 36 | 38 | 33 | 29 | 28 | 25 | 22 | 19 | 17 | 16 |
| 6   | 59  | 48  | 40  | 34  | 53 | 43 | 36 | 31 | 34 | 29 | 25 | 25 | 22 | 20 | 18 | 16 | 14 |
| 7   | 55  | 43  | 35  | 30  | 49 | 39 | 32 | 27 | 31 | 26 | 22 | 23 | 20 | 17 | 16 | 14 | 12 |
| 8   | 51  | 39  | 31  | 26  | 45 | 35 | 28 | 24 | 28 | 23 | 20 | 21 | 18 | 15 | 15 | 13 | 11 |
| 9   | 47  | 35  | 28  | 23  | 42 | 32 | 26 | 21 | 25 | 21 | 17 | 19 | 16 | 14 | 14 | 11 | 10 |
| 10  | 44  | 32  | 25  | 21  | 39 | 29 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 12 | 13 | 10 | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1065 | 1065 | 1065 |
| 5°  | 1066 | 1050 | 1057 |
| 10° | 1058 | 1036 | 1042 |
| 15° | 1042 | 1019 | 1020 |
| 20° | 1021 | 995  | 997  |
| 25° | 1000 | 966  | 971  |
| 30° | 974  | 940  | 937  |
| 35° | 949  | 909  | 901  |
| 40° | 919  | 878  | 868  |
| 45° | 888  | 846  | 833  |
| 50° | 855  | 813  | 793  |
| 55° | 820  | 775  | 756  |
| 60° | 781  | 729  | 713  |
| 65° | 738  | 682  | 664  |
| 70° | 683  | 625  | 610  |
| 75° | 607  | 557  | 560  |
| 80° | 516  | 469  | 466  |
| 85° | 373  | 318  | 308  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2547 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 126.1   | 1.0       |
| 10°-20°   | 354.9   | 2.8       |
| 20°-30°   | 521.5   | 4.2       |
| 30°-40°   | 605.7   | 4.8       |
| 40°-50°   | 605.0   | 4.8       |
| 50°-60°   | 527.5   | 4.2       |
| 60°-70°   | 389.9   | 3.1       |
| 70°-80°   | 220.6   | 1.8       |
| 80°-90°   | 67.5    | 0.5       |
| 90°-100°  | 202.2   | 1.6       |
| 100°-110° | 642.4   | 5.1       |
| 110°-120° | 1099.4  | 8.8       |
| 120°-130° | 1445.9  | 11.5      |
| 130°-140° | 1623.0  | 12.9      |
| 140°-150° | 1591.6  | 12.7      |
| 150°-160° | 1335.1  | 10.6      |
| 160°-170° | 885.4   | 7.1       |
| 170°-180° | 309.5   | 2.5       |
| 0°-30°    | 1002.5  | 8.0       |
| 0°-40°    | 1608.3  | 12.8      |
| 0°-60°    | 2740.7  | 21.8      |
| 0°-90°    | 3418.8  | 27.2      |
| 90°-120°  | 1944.1  | 15.5      |
| 90°-150°  | 6604.6  | 52.6      |
| 90°-180°  | 9134.0  | 72.8      |
| 0°-180°   | 12553.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1340 | 1340  | 1340 | 1340  | 1340 |      |
| 5°   | 1340 | 1335  | 1321 | 1331  | 1329 | 127  |
| 15°  | 1276 | 1268  | 1251 | 1256  | 1250 | 359  |
| 25°  | 1154 | 1144  | 1122 | 1125  | 1122 | 531  |
| 35°  | 996  | 983   | 963  | 955   | 948  | 622  |
| 45°  | 810  | 802   | 782  | 768   | 763  | 626  |
| 55°  | 614  | 606   | 590  | 575   | 568  | 548  |
| 65°  | 414  | 406   | 393  | 381   | 375  | 409  |
| 75°  | 216  | 214   | 207  | 200   | 202  | 231  |
| 85°  | 53   | 52    | 50   | 46    | 45   | 59   |
| 90°  | 3    | 36    | 96   | 91    | 94   | 12   |
| 95°  | 144  | 171   | 176  | 176   | 171  | 160  |
| 105° | 593  | 601   | 607  | 612   | 612  | 626  |
| 115° | 1103 | 1119  | 1114 | 1111  | 1103 | 1091 |
| 125° | 1605 | 1629  | 1622 | 1613  | 1610 | 1434 |
| 135° | 2076 | 2106  | 2112 | 2109  | 2101 | 1604 |
| 145° | 2520 | 2540  | 2555 | 2558  | 2548 | 1574 |
| 155° | 2881 | 2889  | 2898 | 2912  | 2903 | 1326 |
| 165° | 3135 | 3132  | 3132 | 3151  | 3138 | 884  |
| 175° | 3262 | 3254  | 3248 | 3268  | 3251 | 310  |
| 180° | 3268 | 3268  | 3268 | 3268  | 3268 |      |

TEST NUMBER: P920942

CATALOG NUMBER: DFN2DIP-TR4F0-040D120US935-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1340.1 | 1340.1 | 1340.1 | 1340.1 | 1340.1 |
| 2.5°   | 1347.9 | 1341.4 | 1327.2 | 1340.1 | 1337.6 |
| 5°     | 1340.1 | 1335.0 | 1320.8 | 1331.0 | 1328.6 |
| 7.5°   | 1331.0 | 1323.4 | 1309.1 | 1319.6 | 1317.0 |
| 10°    | 1317.0 | 1307.9 | 1292.5 | 1302.8 | 1298.9 |
| 12.5°  | 1297.5 | 1289.9 | 1274.4 | 1280.9 | 1278.2 |
| 15°    | 1275.7 | 1268.0 | 1251.2 | 1256.4 | 1250.0 |
| 17.5°  | 1248.6 | 1241.0 | 1224.2 | 1230.5 | 1224.2 |
| 20°    | 1218.9 | 1211.3 | 1193.3 | 1197.0 | 1192.1 |
| 22.5°  | 1189.4 | 1177.8 | 1161.0 | 1161.0 | 1158.4 |
| 25°    | 1154.5 | 1144.3 | 1122.4 | 1124.9 | 1122.4 |
| 27.5°  | 1115.9 | 1106.8 | 1090.2 | 1086.3 | 1079.9 |
| 30°    | 1077.3 | 1066.9 | 1047.7 | 1043.8 | 1038.6 |
| 32.5°  | 1036.0 | 1028.4 | 1007.7 | 1000.0 | 994.7  |
| 35°    | 996.1  | 983.3  | 962.6  | 954.8  | 948.4  |
| 37.5°  | 951.0  | 939.3  | 918.7  | 909.7  | 903.3  |
| 40°    | 904.7  | 894.2  | 873.6  | 862.1  | 857.0  |
| 42.5°  | 859.5  | 849.1  | 828.6  | 815.6  | 808.0  |
| 45°    | 810.5  | 801.6  | 782.1  | 768.1  | 762.8  |
| 47.5°  | 762.8  | 753.8  | 733.2  | 719.0  | 711.4  |
| 50°    | 712.6  | 706.1  | 688.1  | 670.0  | 663.6  |
| 52.5°  | 663.6  | 654.6  | 637.9  | 623.7  | 614.7  |
| 55°    | 613.5  | 605.6  | 590.2  | 574.7  | 568.3  |
| 57.5°  | 563.1  | 556.7  | 539.8  | 524.4  | 519.3  |
| 60°    | 512.8  | 507.7  | 489.7  | 475.5  | 471.7  |
| 62.5°  | 463.9  | 454.9  | 442.0  | 429.1  | 424.0  |
| 65°    | 413.7  | 405.9  | 393.0  | 381.4  | 375.1  |
| 67.5°  | 362.1  | 355.6  | 344.1  | 335.1  | 329.9  |
| 70°    | 314.4  | 309.3  | 297.6  | 288.6  | 283.5  |
| 72.5°  | 265.5  | 260.3  | 253.9  | 244.9  | 241.0  |
| 75°    | 216.5  | 214.0  | 207.4  | 199.8  | 202.3  |
| 77.5°  | 172.6  | 167.5  | 164.9  | 161.0  | 157.2  |
| 80°    | 128.9  | 127.5  | 124.9  | 121.1  | 118.6  |
| 82.5°  | 87.6   | 87.6   | 86.4   | 81.2   | 81.2   |
| 85°    | 52.8   | 51.6   | 50.3   | 46.3   | 45.1   |
| 87.5°  | 23.2   | 20.7   | 18.1   | 14.2   | 12.8   |
| 90°    | 2.9    | 35.5   | 96.5   | 90.7   | 93.6   |
| 92.5°  | 61.0   | 82.7   | 85.7   | 88.7   | 88.7   |
| 95°    | 143.8  | 171.4  | 176.3  | 176.3  | 171.4  |
| 97.5°  | 239.4  | 265.0  | 275.9  | 275.9  | 275.9  |
| 100°   | 349.7  | 372.4  | 380.2  | 380.2  | 377.3  |
| 102.5° | 466.0  | 482.7  | 493.5  | 496.5  | 493.5  |
| 105°   | 593.1  | 600.9  | 606.8  | 611.7  | 611.7  |
| 107.5° | 719.1  | 731.0  | 731.0  | 732.9  | 719.1  |
| 110°   | 841.3  | 857.0  | 857.0  | 857.0  | 849.2  |

TEST NUMBER: P920942

CATALOG NUMBER: DFN2DIP-TR4F0-040D120US935-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 973.3  | 990.1  | 987.0  | 979.2  | 973.3  |
| 115°   | 1103.3 | 1119.1 | 1114.1 | 1111.2 | 1103.3 |
| 117.5° | 1232.3 | 1254.0 | 1240.3 | 1232.3 | 1224.5 |
| 120°   | 1362.4 | 1384.1 | 1362.4 | 1362.4 | 1353.6 |
| 122.5° | 1480.7 | 1508.2 | 1494.4 | 1486.5 | 1480.7 |
| 125°   | 1604.7 | 1629.4 | 1621.5 | 1612.6 | 1609.6 |
| 127.5° | 1726.0 | 1756.4 | 1745.6 | 1733.8 | 1726.0 |
| 130°   | 1839.2 | 1874.7 | 1869.7 | 1863.8 | 1853.0 |
| 132.5° | 1966.3 | 1993.9 | 1995.8 | 1982.0 | 1974.2 |
| 135°   | 2075.6 | 2106.2 | 2112.1 | 2109.1 | 2101.3 |
| 137.5° | 2197.8 | 2222.4 | 2227.3 | 2225.3 | 2213.5 |
| 140°   | 2305.1 | 2329.8 | 2343.6 | 2343.6 | 2332.7 |
| 142.5° | 2415.5 | 2440.2 | 2448.0 | 2450.9 | 2440.2 |
| 145°   | 2519.9 | 2539.6 | 2555.4 | 2558.4 | 2547.5 |
| 147.5° | 2613.5 | 2638.1 | 2650.0 | 2654.9 | 2644.0 |
| 150°   | 2710.1 | 2726.8 | 2737.6 | 2746.5 | 2737.6 |
| 152.5° | 2795.7 | 2812.4 | 2826.3 | 2837.2 | 2826.3 |
| 155°   | 2881.4 | 2889.3 | 2898.2 | 2912.0 | 2903.1 |
| 157.5° | 2955.4 | 2961.2 | 2966.1 | 2985.9 | 2972.1 |
| 160°   | 3021.3 | 3027.3 | 3030.2 | 3047.0 | 3035.1 |
| 162.5° | 3082.4 | 3082.4 | 3085.4 | 3104.1 | 3090.3 |
| 165°   | 3134.6 | 3131.7 | 3131.7 | 3151.3 | 3137.6 |
| 167.5° | 3181.9 | 3173.0 | 3173.0 | 3192.8 | 3179.0 |
| 170°   | 3217.4 | 3209.5 | 3206.5 | 3226.2 | 3209.5 |
| 172.5° | 3242.0 | 3234.1 | 3231.2 | 3250.9 | 3234.1 |
| 175°   | 3261.7 | 3253.8 | 3247.9 | 3267.6 | 3250.9 |
| 177.5° | 3272.6 | 3264.6 | 3258.7 | 3275.5 | 3258.7 |
| 180°   | 3267.6 | 3267.6 | 3267.6 | 3267.6 | 3267.6 |

TEST NUMBER: P920942

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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 | 4.87             | 5.56 | 6.00  | 6.68  | 8.25  | 4.44           | 5.13 | 5.57 | 6.25  | 7.82  |
|                 | 3H   | 6.52             | 7.14 | 7.66  | 8.27  | 9.85  | 6.05           | 6.66 | 7.19 | 7.79  | 9.37  |
|                 | 4H   | 7.10             | 7.69 | 8.25  | 8.82  | 10.40 | 6.63           | 7.21 | 7.77 | 8.34  | 9.93  |
|                 | 6H   | 7.49             | 8.03 | 8.65  | 9.16  | 10.76 | 7.01           | 7.55 | 8.17 | 8.69  | 10.28 |
|                 | 8H   | 7.59             | 8.10 | 8.75  | 9.25  | 10.84 | 7.12           | 7.63 | 8.27 | 8.78  | 10.36 |
|                 | 12H  | 7.63             | 8.12 | 8.79  | 9.26  | 10.87 | 7.15           | 7.64 | 8.31 | 8.78  | 10.39 |
| 4H              | 2H   | 5.31             | 5.90 | 6.47  | 7.03  | 8.61  | 4.97           | 5.55 | 6.12 | 6.69  | 8.27  |
|                 | 3H   | 7.16             | 7.65 | 8.32  | 8.81  | 10.41 | 6.77           | 7.26 | 7.93 | 8.42  | 10.01 |
|                 | 4H   | 7.87             | 8.32 | 9.03  | 9.47  | 11.08 | 7.47           | 7.92 | 8.63 | 9.06  | 10.68 |
|                 | 6H   | 8.38             | 8.76 | 9.54  | 9.93  | 11.53 | 7.97           | 8.35 | 9.13 | 9.52  | 11.12 |
|                 | 8H   | 8.52             | 8.88 | 9.69  | 10.04 | 11.66 | 8.11           | 8.47 | 9.28 | 9.63  | 11.25 |
|                 | 12H  | 8.59             | 8.91 | 9.77  | 10.08 | 11.71 | 8.16           | 8.49 | 9.35 | 9.66  | 11.29 |
| 8H              | 4H   | 8.05             | 8.41 | 9.22  | 9.57  | 11.19 | 7.69           | 8.05 | 8.86 | 9.21  | 10.83 |
|                 | 6H   | 8.68             | 8.97 | 9.86  | 10.18 | 11.79 | 8.31           | 8.61 | 9.50 | 9.81  | 11.43 |
|                 | 8H   | 8.90             | 9.15 | 10.09 | 10.33 | 11.97 | 8.53           | 8.79 | 9.72 | 9.97  | 11.60 |
|                 | 12H  | 9.02             | 9.25 | 10.22 | 10.42 | 12.10 | 8.63           | 8.86 | 9.83 | 10.04 | 11.71 |
| 12H             | 4H   | 8.03             | 8.36 | 9.21  | 9.53  | 11.15 | 7.68           | 8.00 | 8.86 | 9.18  | 10.80 |
|                 | 6H   | 8.71             | 8.96 | 9.90  | 10.14 | 11.78 | 8.35           | 8.61 | 9.55 | 9.79  | 11.43 |
|                 | 8H   | 8.94             | 9.17 | 10.14 | 10.34 | 12.02 | 8.58           | 8.81 | 9.78 | 9.99  | 11.66 |

END OF REPORT