

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: P917285

Luminaire Tested: DFN2DIP-SQ3F0-040D120US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917285  
REPORT IS A COMBINATION OF REPORTS P901525 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D120US930-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

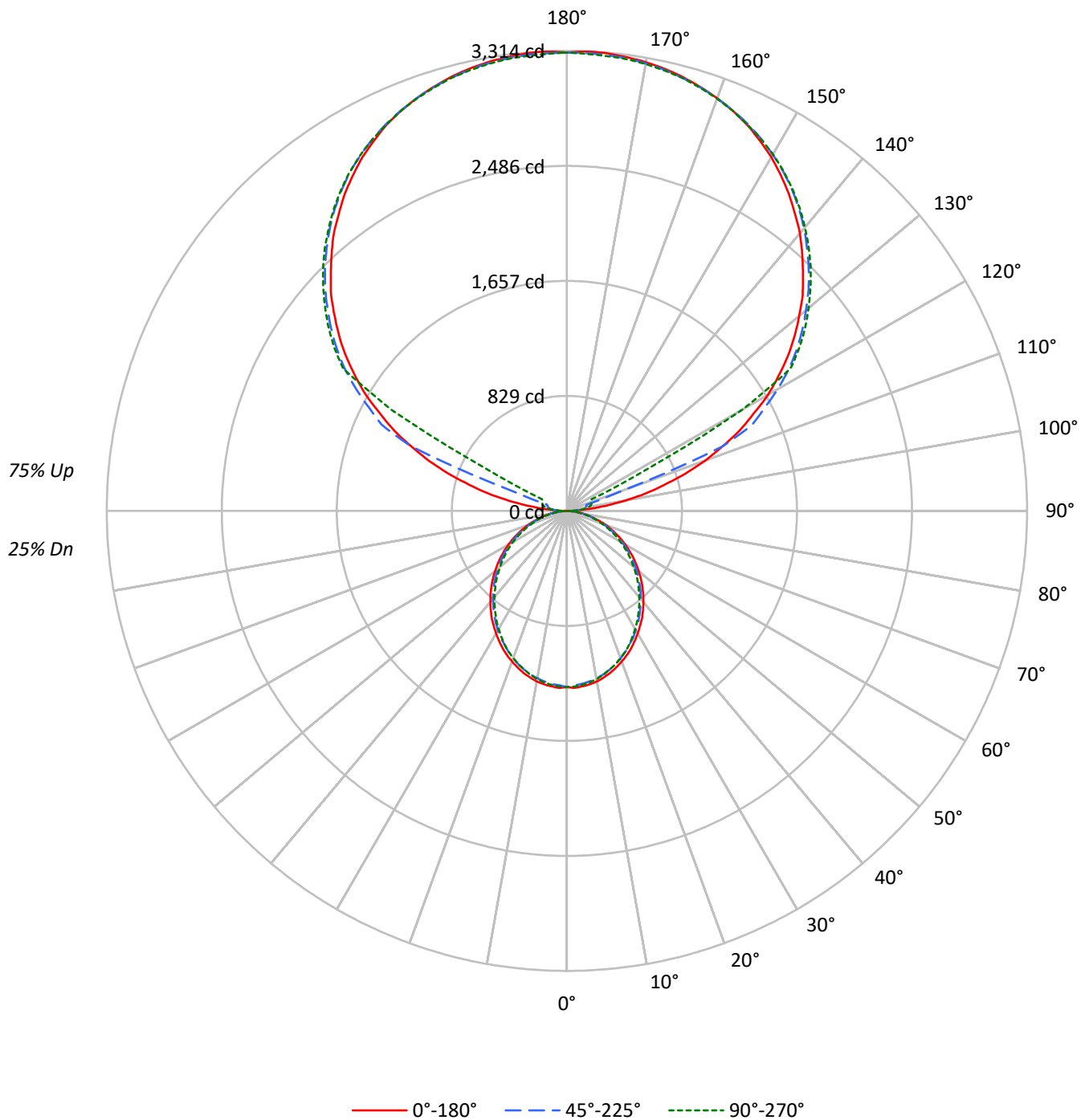
Lumens per Lamp: N/A  
Luminaire Lumens: 12914.3 lumens  
Efficiency: N/A  
Efficacy: 102.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 126.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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   | 101 | 101 | 101 | 101 | 90 | 90 | 90 | 90 | 69 | 69 | 69 | 51 | 51 | 51 | 33 | 33 | 33 |
| 1   | 92  | 88  | 84  | 81  | 82 | 79 | 75 | 73 | 61 | 59 | 57 | 44 | 43 | 42 | 29 | 29 | 28 |
| 2   | 84  | 77  | 71  | 66  | 74 | 69 | 64 | 59 | 53 | 50 | 47 | 39 | 37 | 35 | 26 | 25 | 24 |
| 3   | 76  | 67  | 60  | 55  | 68 | 60 | 54 | 50 | 47 | 43 | 39 | 34 | 32 | 30 | 23 | 21 | 20 |
| 4   | 70  | 60  | 52  | 46  | 62 | 53 | 47 | 42 | 42 | 37 | 33 | 31 | 28 | 25 | 20 | 19 | 17 |
| 5   | 64  | 53  | 45  | 39  | 57 | 47 | 41 | 36 | 37 | 32 | 29 | 27 | 24 | 22 | 18 | 16 | 15 |
| 6   | 59  | 47  | 40  | 34  | 52 | 42 | 36 | 31 | 33 | 28 | 25 | 25 | 21 | 19 | 17 | 15 | 13 |
| 7   | 54  | 43  | 35  | 30  | 48 | 38 | 32 | 27 | 30 | 25 | 22 | 22 | 19 | 17 | 15 | 13 | 12 |
| 8   | 50  | 38  | 31  | 26  | 45 | 35 | 28 | 24 | 27 | 23 | 19 | 20 | 17 | 15 | 14 | 12 | 10 |
| 9   | 47  | 35  | 28  | 23  | 41 | 31 | 25 | 21 | 25 | 20 | 17 | 19 | 15 | 13 | 13 | 11 | 9  |
| 10  | 43  | 32  | 25  | 20  | 39 | 29 | 23 | 19 | 23 | 18 | 15 | 17 | 14 | 12 | 12 | 10 | 8  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1454 | 1454 | 1454 |
| 5°  | 1455 | 1433 | 1443 |
| 10° | 1443 | 1412 | 1423 |
| 15° | 1420 | 1388 | 1392 |
| 20° | 1391 | 1355 | 1360 |
| 25° | 1361 | 1315 | 1324 |
| 30° | 1325 | 1279 | 1277 |
| 35° | 1290 | 1235 | 1228 |
| 40° | 1247 | 1191 | 1181 |
| 45° | 1204 | 1147 | 1134 |
| 50° | 1158 | 1101 | 1078 |
| 55° | 1109 | 1047 | 1027 |
| 60° | 1053 | 984  | 969  |
| 65° | 993  | 918  | 900  |
| 70° | 915  | 838  | 826  |
| 75° | 809  | 742  | 756  |
| 80° | 680  | 619  | 625  |
| 85° | 479  | 410  | 409  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2262 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 119.4   | 0.9       |
| 10°-20°   | 336.0   | 2.6       |
| 20°-30°   | 493.8   | 3.8       |
| 30°-40°   | 573.6   | 4.4       |
| 40°-50°   | 572.9   | 4.4       |
| 50°-60°   | 499.5   | 3.9       |
| 60°-70°   | 369.3   | 2.9       |
| 70°-80°   | 208.9   | 1.6       |
| 80°-90°   | 61.0    | 0.5       |
| 90°-100°  | 108.9   | 0.8       |
| 100°-110° | 405.9   | 3.1       |
| 110°-120° | 1076.4  | 8.3       |
| 120°-130° | 1785.3  | 13.8      |
| 130°-140° | 1896.5  | 14.7      |
| 140°-150° | 1762.5  | 13.6      |
| 150°-160° | 1417.0  | 11.0      |
| 160°-170° | 913.1   | 7.1       |
| 170°-180° | 314.3   | 2.4       |
| 0°-30°    | 949.3   | 7.4       |
| 0°-40°    | 1522.9  | 11.8      |
| 0°-60°    | 2595.3  | 20.1      |
| 0°-90°    | 3234.4  | 25.0      |
| 90°-120°  | 1591.2  | 12.3      |
| 90°-150°  | 7035.5  | 54.5      |
| 90°-180°  | 9680.0  | 75.0      |
| 0°-180°   | 12914.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1269 | 1269  | 1269 | 1269  | 1269 |      |
| 5°   | 1269 | 1264  | 1251 | 1260  | 1258 | 120  |
| 15°  | 1208 | 1201  | 1185 | 1190  | 1184 | 340  |
| 25°  | 1093 | 1084  | 1063 | 1065  | 1063 | 503  |
| 35°  | 943  | 931   | 912  | 904   | 898  | 589  |
| 45°  | 768  | 759   | 741  | 727   | 722  | 592  |
| 55°  | 581  | 574   | 559  | 544   | 538  | 519  |
| 65°  | 392  | 384   | 372  | 361   | 355  | 387  |
| 75°  | 205  | 203   | 196  | 189   | 192  | 219  |
| 85°  | 50   | 49    | 48   | 44    | 43   | 56   |
| 90°  | 2    | 29    | 48   | 60    | 64   | 12   |
| 95°  | 155  | 76    | 93   | 105   | 103  | 184  |
| 105° | 726  | 798   | 146  | 172   | 182  | 776  |
| 115° | 1374 | 1414  | 1474 | 368   | 196  | 1352 |
| 125° | 1942 | 1974  | 2019 | 2036  | 2043 | 1732 |
| 135° | 2404 | 2442  | 2463 | 2487  | 2482 | 1857 |
| 145° | 2788 | 2786  | 2826 | 2843  | 2831 | 1744 |
| 155° | 3070 | 3049  | 3077 | 3092  | 3073 | 1415 |
| 165° | 3235 | 3221  | 3228 | 3245  | 3228 | 914  |
| 175° | 3309 | 3292  | 3297 | 3314  | 3290 | 315  |
| 180° | 3302 | 3302  | 3302 | 3302  | 3302 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1268.9 | 1268.9 | 1268.9 | 1268.9 | 1268.9 |
| 2.5°   | 1276.3 | 1270.2 | 1256.8 | 1268.9 | 1266.6 |
| 5°     | 1268.9 | 1264.1 | 1250.7 | 1260.4 | 1258.1 |
| 7.5°   | 1260.4 | 1253.1 | 1239.7 | 1249.5 | 1247.1 |
| 10°    | 1247.1 | 1238.5 | 1223.9 | 1233.6 | 1230.0 |
| 12.5°  | 1228.7 | 1221.4 | 1206.8 | 1212.9 | 1210.4 |
| 15°    | 1207.9 | 1200.7 | 1184.8 | 1189.7 | 1183.6 |
| 17.5°  | 1182.3 | 1175.1 | 1159.2 | 1165.2 | 1159.2 |
| 20°    | 1154.2 | 1147.0 | 1129.9 | 1133.5 | 1128.8 |
| 22.5°  | 1126.3 | 1115.2 | 1099.3 | 1099.3 | 1096.9 |
| 25°    | 1093.2 | 1083.5 | 1062.8 | 1065.2 | 1062.8 |
| 27.5°  | 1056.6 | 1048.1 | 1032.3 | 1028.7 | 1022.6 |
| 30°    | 1020.1 | 1010.3 | 992.1  | 988.4  | 983.5  |
| 32.5°  | 981.0  | 973.8  | 954.2  | 946.9  | 941.9  |
| 35°    | 943.2  | 931.1  | 911.5  | 904.2  | 898.1  |
| 37.5°  | 900.5  | 889.5  | 869.9  | 861.4  | 855.3  |
| 40°    | 856.6  | 846.8  | 827.2  | 816.4  | 811.5  |
| 42.5°  | 813.9  | 804.0  | 784.6  | 772.3  | 765.1  |
| 45°    | 767.5  | 759.0  | 740.6  | 727.3  | 722.4  |
| 47.5°  | 722.4  | 713.8  | 694.3  | 680.9  | 673.6  |
| 50°    | 674.7  | 668.6  | 651.6  | 634.5  | 628.4  |
| 52.5°  | 628.4  | 619.9  | 604.1  | 590.6  | 582.0  |
| 55°    | 580.9  | 573.5  | 558.9  | 544.2  | 538.2  |
| 57.5°  | 533.2  | 527.2  | 511.2  | 496.6  | 491.7  |
| 60°    | 485.6  | 480.8  | 463.7  | 450.3  | 446.6  |
| 62.5°  | 439.3  | 430.7  | 418.6  | 406.3  | 401.5  |
| 65°    | 391.8  | 384.3  | 372.2  | 361.2  | 355.1  |
| 67.5°  | 342.9  | 336.7  | 325.9  | 317.3  | 312.4  |
| 70°    | 297.7  | 292.9  | 281.8  | 273.3  | 268.5  |
| 72.5°  | 251.4  | 246.5  | 240.4  | 231.9  | 228.2  |
| 75°    | 205.0  | 202.6  | 196.4  | 189.1  | 191.6  |
| 77.5°  | 163.5  | 158.6  | 156.1  | 152.5  | 148.9  |
| 80°    | 122.1  | 120.7  | 118.3  | 114.7  | 112.3  |
| 82.5°  | 83.0   | 83.0   | 81.9   | 76.9   | 76.9   |
| 85°    | 50.0   | 48.8   | 47.6   | 43.9   | 42.7   |
| 87.5°  | 22.0   | 19.6   | 17.1   | 13.5   | 12.1   |
| 90°    | 2.3    | 28.6   | 47.7   | 59.8   | 64.4   |
| 92.5°  | 59.8   | 50.2   | 57.3   | 62.1   | 64.4   |
| 95°    | 155.2  | 76.3   | 93.0   | 105.3  | 102.7  |
| 97.5°  | 279.5  | 83.7   | 121.7  | 129.1  | 131.3  |
| 100°   | 423.0  | 95.6   | 136.2  | 155.2  | 160.0  |
| 102.5° | 580.5  | 575.9  | 141.0  | 167.1  | 174.5  |
| 105°   | 726.3  | 798.1  | 145.9  | 171.9  | 181.6  |
| 107.5° | 895.9  | 955.5  | 150.7  | 176.8  | 186.4  |
| 110°   | 1058.5 | 1108.5 | 418.2  | 179.3  | 188.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1211.5 | 1254.3 | 1213.7 | 183.8  | 191.2  |
| 115°   | 1373.7 | 1414.3 | 1474.1 | 367.9  | 196.1  |
| 117.5° | 1514.7 | 1562.4 | 1603.3 | 1261.3 | 635.5  |
| 120°   | 1672.5 | 1708.2 | 1751.3 | 1780.0 | 1457.4 |
| 122.5° | 1806.1 | 1844.4 | 1892.4 | 1906.6 | 1909.1 |
| 125°   | 1942.3 | 1973.5 | 2018.9 | 2035.6 | 2042.7 |
| 127.5° | 2066.5 | 2100.0 | 2136.1 | 2159.9 | 2162.2 |
| 130°   | 2183.7 | 2222.0 | 2248.1 | 2274.5 | 2272.2 |
| 132.5° | 2303.1 | 2334.4 | 2360.5 | 2382.1 | 2379.8 |
| 135°   | 2403.6 | 2441.9 | 2463.2 | 2487.3 | 2482.5 |
| 137.5° | 2508.6 | 2537.2 | 2561.3 | 2585.1 | 2578.1 |
| 140°   | 2611.3 | 2630.6 | 2656.6 | 2678.3 | 2666.4 |
| 142.5° | 2697.5 | 2714.3 | 2745.2 | 2764.2 | 2752.3 |
| 145°   | 2788.3 | 2785.8 | 2826.3 | 2843.1 | 2831.1 |
| 147.5° | 2866.9 | 2859.8 | 2900.4 | 2912.3 | 2903.0 |
| 150°   | 2943.5 | 2926.8 | 2965.1 | 2979.3 | 2967.4 |
| 152.5° | 3007.9 | 2988.9 | 3024.7 | 3039.1 | 3022.4 |
| 155°   | 3070.0 | 3048.7 | 3077.4 | 3091.6 | 3072.6 |
| 157.5° | 3120.2 | 3101.2 | 3122.8 | 3139.6 | 3120.2 |
| 160°   | 3163.4 | 3148.9 | 3163.4 | 3177.5 | 3160.8 |
| 162.5° | 3201.4 | 3187.2 | 3199.1 | 3215.9 | 3194.3 |
| 165°   | 3234.9 | 3220.7 | 3227.8 | 3244.6 | 3227.8 |
| 167.5° | 3261.3 | 3246.8 | 3254.2 | 3270.9 | 3249.4 |
| 170°   | 3282.8 | 3268.4 | 3273.2 | 3289.9 | 3268.4 |
| 172.5° | 3297.0 | 3282.8 | 3287.7 | 3304.4 | 3282.8 |
| 175°   | 3308.9 | 3292.2 | 3297.0 | 3313.8 | 3289.9 |
| 177.5° | 3313.8 | 3297.0 | 3299.6 | 3316.3 | 3294.8 |
| 180°   | 3301.9 | 3301.9 | 3301.9 | 3301.9 | 3301.9 |

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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 | 5.60             | 6.27 | 6.74  | 7.40  | 8.99  | 5.15           | 5.83 | 6.30  | 6.96  | 8.55  |
|                 | 3H   | 7.24             | 7.84 | 8.39  | 8.98  | 10.59 | 6.75           | 7.35 | 7.90  | 8.49  | 10.10 |
|                 | 4H   | 7.81             | 8.39 | 8.98  | 9.53  | 11.14 | 7.32           | 7.89 | 8.48  | 9.04  | 10.64 |
|                 | 6H   | 8.20             | 8.73 | 9.37  | 9.87  | 11.49 | 7.70           | 8.23 | 8.87  | 9.37  | 10.99 |
|                 | 8H   | 8.30             | 8.80 | 9.47  | 9.96  | 11.57 | 7.80           | 8.30 | 8.97  | 9.46  | 11.07 |
|                 | 12H  | 8.34             | 8.81 | 9.51  | 9.97  | 11.60 | 7.83           | 8.30 | 9.00  | 9.46  | 11.09 |
| 4H              | 2H   | 6.03             | 6.60 | 7.20  | 7.75  | 9.36  | 5.68           | 6.25 | 6.85  | 7.39  | 9.00  |
|                 | 3H   | 7.87             | 8.35 | 9.05  | 9.52  | 11.14 | 7.47           | 7.94 | 8.64  | 9.11  | 10.73 |
|                 | 4H   | 8.58             | 9.02 | 9.75  | 10.17 | 11.81 | 8.15           | 8.59 | 9.33  | 9.75  | 11.39 |
|                 | 6H   | 9.08             | 9.45 | 10.26 | 10.63 | 12.26 | 8.64           | 9.02 | 9.82  | 10.20 | 11.83 |
|                 | 8H   | 9.22             | 9.57 | 10.40 | 10.74 | 12.39 | 8.78           | 9.13 | 9.96  | 10.30 | 11.95 |
|                 | 12H  | 9.28             | 9.60 | 10.48 | 10.78 | 12.43 | 8.83           | 9.15 | 10.03 | 10.33 | 11.98 |
| 8H              | 4H   | 8.75             | 9.11 | 9.93  | 10.28 | 11.92 | 8.38           | 8.73 | 9.56  | 9.90  | 11.54 |
|                 | 6H   | 9.37             | 9.66 | 10.57 | 10.87 | 12.52 | 8.99           | 9.28 | 10.19 | 10.49 | 12.13 |
|                 | 8H   | 9.59             | 9.84 | 10.79 | 11.03 | 12.69 | 9.19           | 9.45 | 10.40 | 10.64 | 12.30 |
|                 | 12H  | 9.71             | 9.93 | 10.91 | 11.12 | 12.81 | 9.29           | 9.52 | 10.50 | 10.70 | 12.40 |
| 12H             | 4H   | 8.73             | 9.05 | 9.92  | 10.23 | 11.88 | 8.36           | 8.68 | 9.56  | 9.86  | 11.51 |
|                 | 6H   | 9.40             | 9.65 | 10.60 | 10.84 | 12.50 | 9.02           | 9.28 | 10.23 | 10.47 | 12.13 |
|                 | 8H   | 9.63             | 9.85 | 10.83 | 11.04 | 12.73 | 9.25           | 9.47 | 10.45 | 10.66 | 12.35 |

END OF REPORT