

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: P924291

Luminaire Tested: DFN2DIP-HX2F0-040D040US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924291  
REPORT IS A COMBINATION OF REPORTS P900695 AND P897595  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-040D040US950-FLLONL  
Description: 2 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

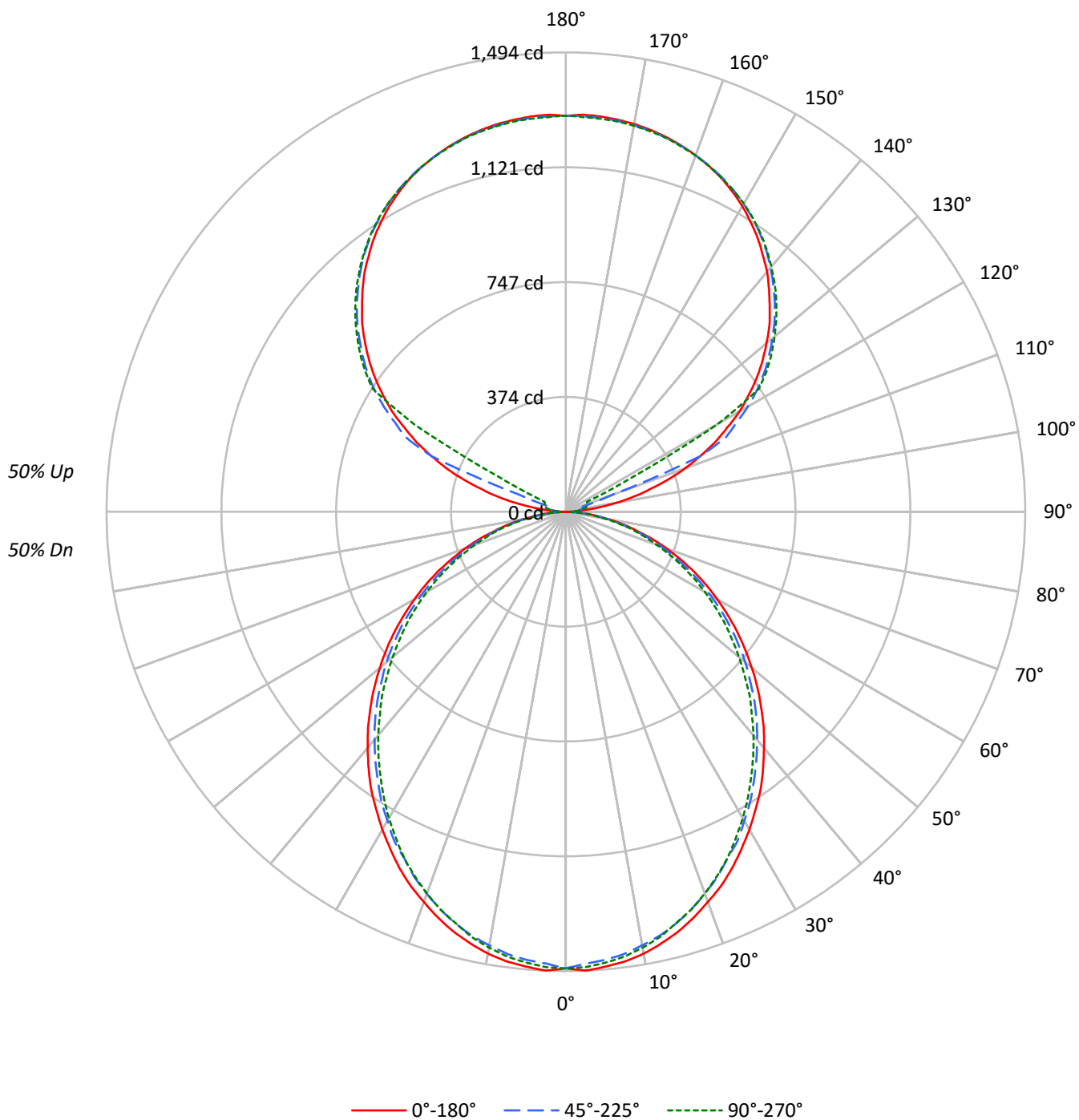
Lumens per Lamp: N/A  
Luminaire Lumens: 7555.7 lumens  
Efficiency: N/A  
Efficacy: 115.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 65.4  
Input Voltage (V): 120  
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

TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLLONL

**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 93  | 90  | 86  | 90 | 86 | 83 | 80 | 73 | 71 | 68 | 61 | 59 | 58 | 50 | 48 | 47 |
| 2   | 89  | 82  | 75  | 70  | 82 | 76 | 70 | 66 | 64 | 60 | 57 | 53 | 51 | 48 | 44 | 42 | 40 |
| 3   | 81  | 72  | 64  | 59  | 75 | 66 | 60 | 55 | 56 | 52 | 48 | 47 | 44 | 41 | 39 | 36 | 34 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 42 | 38 | 35 | 35 | 32 | 29 |
| 5   | 68  | 57  | 48  | 42  | 63 | 53 | 45 | 40 | 45 | 39 | 35 | 38 | 34 | 30 | 31 | 28 | 26 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 31 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 36 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 23 | 20 |
| 8   | 54  | 42  | 34  | 29  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3498 | 3498 | 3498 |
| 5°  | 3498 | 3441 | 3466 |
| 10° | 3465 | 3387 | 3413 |
| 15° | 3408 | 3323 | 3333 |
| 20° | 3334 | 3237 | 3252 |
| 25° | 3259 | 3136 | 3159 |
| 30° | 3168 | 3042 | 3043 |
| 35° | 3081 | 2932 | 2920 |
| 40° | 2974 | 2820 | 2802 |
| 45° | 2868 | 2708 | 2681 |
| 50° | 2751 | 2590 | 2543 |
| 55° | 2629 | 2454 | 2413 |
| 60° | 2490 | 2293 | 2265 |
| 65° | 2337 | 2126 | 2092 |
| 70° | 2144 | 1922 | 1902 |
| 75° | 1878 | 1677 | 1719 |
| 80° | 1554 | 1365 | 1387 |
| 85° | 1056 | 856  | 858  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2868 cd/sqm

TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 139.8  | 1.8       |
| 10°-20°   | 393.2  | 5.2       |
| 20°-30°   | 577.9  | 7.6       |
| 30°-40°   | 671.2  | 8.9       |
| 40°-50°   | 670.3  | 8.9       |
| 50°-60°   | 584.5  | 7.7       |
| 60°-70°   | 432.1  | 5.7       |
| 70°-80°   | 244.5  | 3.2       |
| 80°-90°   | 66.8   | 0.9       |
| 90°-100°  | 42.5   | 0.6       |
| 100°-110° | 158.3  | 2.1       |
| 110°-120° | 419.9  | 5.6       |
| 120°-130° | 696.4  | 9.2       |
| 130°-140° | 739.7  | 9.8       |
| 140°-150° | 687.5  | 9.1       |
| 150°-160° | 552.7  | 7.3       |
| 160°-170° | 356.1  | 4.7       |
| 170°-180° | 122.6  | 1.6       |
| 0°-30°    | 1110.8 | 14.7      |
| 0°-40°    | 1782.0 | 23.6      |
| 0°-60°    | 3036.8 | 40.2      |
| 0°-90°    | 3780.1 | 50.0      |
| 90°-120°  | 620.6  | 8.2       |
| 90°-150°  | 2744.1 | 36.3      |
| 90°-180°  | 3776.0 | 50.0      |
| 0°-180°   | 7555.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1485 | 1485  | 1485 | 1485  | 1485 |      |
| 5°   | 1485 | 1479  | 1463 | 1475  | 1472 | 141  |
| 15°  | 1413 | 1405  | 1386 | 1392  | 1385 | 398  |
| 25°  | 1279 | 1268  | 1244 | 1246  | 1244 | 589  |
| 35°  | 1104 | 1090  | 1067 | 1058  | 1051 | 689  |
| 45°  | 898  | 888   | 867  | 851   | 845  | 693  |
| 55°  | 680  | 671   | 654  | 637   | 630  | 608  |
| 65°  | 458  | 450   | 436  | 423   | 416  | 453  |
| 75°  | 240  | 237   | 230  | 221   | 224  | 256  |
| 85°  | 58   | 57    | 56   | 51    | 50   | 65   |
| 90°  | 1    | 11    | 19   | 23    | 25   | 7    |
| 95°  | 60   | 30    | 36   | 41    | 40   | 72   |
| 105° | 283  | 311   | 57   | 67    | 71   | 303  |
| 115° | 536  | 552   | 575  | 144   | 76   | 527  |
| 125° | 758  | 770   | 787  | 794   | 797  | 676  |
| 135° | 938  | 952   | 961  | 970   | 968  | 724  |
| 145° | 1088 | 1087  | 1102 | 1109  | 1104 | 680  |
| 155° | 1198 | 1189  | 1200 | 1206  | 1198 | 552  |
| 165° | 1262 | 1256  | 1259 | 1266  | 1259 | 356  |
| 175° | 1291 | 1284  | 1286 | 1292  | 1283 | 123  |
| 180° | 1288 | 1288  | 1288 | 1288  | 1288 |      |

TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1484.8 | 1484.8 | 1484.8 | 1484.8 | 1484.8 |
| 2.5°   | 1493.5 | 1486.3 | 1470.6 | 1484.8 | 1482.1 |
| 5°     | 1484.8 | 1479.2 | 1463.4 | 1474.8 | 1472.1 |
| 7.5°   | 1474.8 | 1466.3 | 1450.6 | 1462.1 | 1459.2 |
| 10°    | 1459.2 | 1449.2 | 1432.1 | 1443.5 | 1439.2 |
| 12.5°  | 1437.7 | 1429.2 | 1412.1 | 1419.3 | 1416.3 |
| 15°    | 1413.4 | 1405.0 | 1386.4 | 1392.1 | 1385.0 |
| 17.5°  | 1383.5 | 1375.0 | 1356.4 | 1363.5 | 1356.4 |
| 20°    | 1350.6 | 1342.1 | 1322.1 | 1326.3 | 1320.8 |
| 22.5°  | 1317.9 | 1305.0 | 1286.4 | 1286.4 | 1283.5 |
| 25°    | 1279.2 | 1267.9 | 1243.6 | 1246.4 | 1243.6 |
| 27.5°  | 1236.4 | 1226.4 | 1208.0 | 1203.7 | 1196.6 |
| 30°    | 1193.6 | 1182.2 | 1160.8 | 1156.5 | 1150.8 |
| 32.5°  | 1147.9 | 1139.5 | 1116.6 | 1108.0 | 1102.2 |
| 35°    | 1103.7 | 1089.5 | 1066.6 | 1058.0 | 1050.8 |
| 37.5°  | 1053.7 | 1040.8 | 1017.9 | 1008.0 | 1000.8 |
| 40°    | 1002.4 | 990.8  | 967.9  | 955.2  | 949.5  |
| 42.5°  | 952.4  | 940.8  | 918.1  | 903.7  | 895.2  |
| 45°    | 898.1  | 888.2  | 866.6  | 851.1  | 845.2  |
| 47.5°  | 845.2  | 835.2  | 812.4  | 796.7  | 788.2  |
| 50°    | 789.5  | 782.4  | 762.4  | 742.4  | 735.2  |
| 52.5°  | 735.2  | 725.3  | 706.8  | 691.1  | 681.1  |
| 55°    | 679.7  | 671.0  | 654.0  | 636.8  | 629.7  |
| 57.5°  | 623.9  | 616.9  | 598.2  | 581.1  | 575.4  |
| 60°    | 568.2  | 562.6  | 542.6  | 526.9  | 522.6  |
| 62.5°  | 514.0  | 504.0  | 489.8  | 475.5  | 469.7  |
| 65°    | 458.4  | 449.7  | 435.5  | 422.6  | 415.6  |
| 67.5°  | 401.3  | 394.0  | 381.3  | 371.3  | 365.6  |
| 70°    | 348.4  | 342.7  | 329.8  | 319.8  | 314.2  |
| 72.5°  | 294.2  | 288.4  | 281.3  | 271.3  | 267.0  |
| 75°    | 239.8  | 237.1  | 229.8  | 221.3  | 224.2  |
| 77.5°  | 191.3  | 185.6  | 182.7  | 178.4  | 174.2  |
| 80°    | 142.8  | 141.3  | 138.4  | 134.2  | 131.4  |
| 82.5°  | 97.1   | 97.1   | 95.8   | 90.0   | 90.0   |
| 85°    | 58.5   | 57.1   | 55.7   | 51.3   | 50.0   |
| 87.5°  | 25.8   | 22.9   | 20.0   | 15.7   | 14.2   |
| 90°    | 0.9    | 11.2   | 18.6   | 23.4   | 25.1   |
| 92.5°  | 23.4   | 19.6   | 22.3   | 24.2   | 25.1   |
| 95°    | 60.5   | 29.8   | 36.3   | 41.0   | 40.1   |
| 97.5°  | 109.0  | 32.6   | 47.5   | 50.4   | 51.2   |
| 100°   | 164.9  | 37.3   | 53.1   | 60.5   | 62.4   |
| 102.5° | 226.4  | 224.7  | 55.0   | 65.2   | 68.0   |
| 105°   | 283.2  | 311.3  | 56.9   | 67.1   | 70.8   |
| 107.5° | 349.5  | 372.7  | 58.8   | 69.0   | 72.7   |
| 110°   | 412.9  | 432.4  | 163.1  | 69.9   | 73.6   |

TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 472.5  | 489.2  | 473.4  | 71.7   | 74.6   |
| 115°   | 535.8  | 551.6  | 575.0  | 143.5  | 76.5   |
| 117.5° | 590.8  | 609.4  | 625.3  | 492.0  | 247.8  |
| 120°   | 652.3  | 666.3  | 683.1  | 694.3  | 568.5  |
| 122.5° | 704.4  | 719.4  | 738.1  | 743.6  | 744.6  |
| 125°   | 757.6  | 769.8  | 787.4  | 794.0  | 796.8  |
| 127.5° | 806.0  | 819.1  | 833.1  | 842.5  | 843.3  |
| 130°   | 851.7  | 866.7  | 876.8  | 887.1  | 886.3  |
| 132.5° | 898.3  | 910.5  | 920.7  | 929.1  | 928.2  |
| 135°   | 937.5  | 952.5  | 960.8  | 970.1  | 968.3  |
| 137.5° | 978.4  | 989.6  | 999.0  | 1008.3 | 1005.5 |
| 140°   | 1018.5 | 1026.0 | 1036.2 | 1044.6 | 1040.0 |
| 142.5° | 1052.2 | 1058.7 | 1070.8 | 1078.1 | 1073.5 |
| 145°   | 1087.6 | 1086.6 | 1102.3 | 1108.9 | 1104.3 |
| 147.5° | 1118.2 | 1115.4 | 1131.3 | 1135.9 | 1132.3 |
| 150°   | 1148.0 | 1141.6 | 1156.5 | 1162.1 | 1157.4 |
| 152.5° | 1173.2 | 1165.8 | 1179.7 | 1185.3 | 1178.9 |
| 155°   | 1197.5 | 1189.2 | 1200.3 | 1205.9 | 1198.4 |
| 157.5° | 1217.0 | 1209.6 | 1218.1 | 1224.6 | 1217.0 |
| 160°   | 1233.8 | 1228.2 | 1233.8 | 1239.3 | 1232.9 |
| 162.5° | 1248.7 | 1243.2 | 1247.8 | 1254.3 | 1245.9 |
| 165°   | 1261.8 | 1256.2 | 1259.0 | 1265.5 | 1259.0 |
| 167.5° | 1272.1 | 1266.3 | 1269.3 | 1275.8 | 1267.4 |
| 170°   | 1280.5 | 1274.8 | 1276.6 | 1283.2 | 1274.8 |
| 172.5° | 1286.0 | 1280.5 | 1282.4 | 1288.9 | 1280.5 |
| 175°   | 1290.6 | 1284.1 | 1286.0 | 1292.5 | 1283.2 |
| 177.5° | 1292.5 | 1286.0 | 1286.9 | 1293.5 | 1285.1 |
| 180°   | 1287.9 | 1287.9 | 1287.9 | 1287.9 | 1287.9 |

TEST NUMBER: P924291

CATALOG NUMBER: DFN2DIP-HX2F0-040D040US950-FLLONL

**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 | 11.49            | 12.35 | 12.45 | 13.32 | 14.59 | 11.07          | 11.93 | 12.02 | 12.90 | 14.17 |
|                 | 3H   | 13.12            | 13.90 | 14.09 | 14.88 | 16.17 | 12.66          | 13.44 | 13.63 | 14.42 | 15.71 |
|                 | 4H   | 13.70            | 14.43 | 14.68 | 15.41 | 16.71 | 13.24          | 13.97 | 14.22 | 14.95 | 16.25 |
|                 | 6H   | 14.08            | 14.75 | 15.07 | 15.74 | 17.05 | 13.62          | 14.29 | 14.61 | 15.28 | 16.60 |
|                 | 8H   | 14.17            | 14.81 | 15.17 | 15.82 | 17.13 | 13.71          | 14.36 | 14.71 | 15.36 | 16.67 |
|                 | 12H  | 14.21            | 14.82 | 15.21 | 15.82 | 17.16 | 13.75          | 14.36 | 14.75 | 15.36 | 16.70 |
| 4H              | 2H   | 11.94            | 12.67 | 12.93 | 13.66 | 14.96 | 11.60          | 12.33 | 12.59 | 13.32 | 14.62 |
|                 | 3H   | 13.78            | 14.39 | 14.78 | 15.40 | 16.72 | 13.39          | 14.01 | 14.39 | 15.02 | 16.33 |
|                 | 4H   | 14.47            | 15.03 | 15.48 | 16.04 | 17.38 | 14.08          | 14.64 | 15.08 | 15.64 | 16.98 |
|                 | 6H   | 14.96            | 15.44 | 15.98 | 16.48 | 17.81 | 14.57          | 15.05 | 15.59 | 16.08 | 17.42 |
|                 | 8H   | 15.10            | 15.55 | 16.12 | 16.57 | 17.93 | 14.70          | 15.15 | 15.72 | 16.18 | 17.53 |
|                 | 12H  | 15.16            | 15.57 | 16.20 | 16.61 | 17.96 | 14.76          | 15.16 | 15.79 | 16.20 | 17.56 |
| 8H              | 4H   | 14.66            | 15.11 | 15.68 | 16.13 | 17.48 | 14.31          | 14.76 | 15.32 | 15.78 | 17.13 |
|                 | 6H   | 15.26            | 15.63 | 16.30 | 16.70 | 18.05 | 14.91          | 15.28 | 15.95 | 16.35 | 17.69 |
|                 | 8H   | 15.46            | 15.79 | 16.51 | 16.84 | 18.21 | 15.11          | 15.44 | 16.16 | 16.49 | 17.85 |
|                 | 12H  | 15.58            | 15.87 | 16.63 | 16.91 | 18.32 | 15.21          | 15.50 | 16.26 | 16.54 | 17.95 |
| 12H             | 4H   | 14.64            | 15.05 | 15.68 | 16.09 | 17.44 | 14.30          | 14.70 | 15.33 | 15.74 | 17.10 |
|                 | 6H   | 15.28            | 15.61 | 16.33 | 16.66 | 18.03 | 14.94          | 15.27 | 15.99 | 16.32 | 17.69 |
|                 | 8H   | 15.51            | 15.80 | 16.56 | 16.84 | 18.25 | 15.16          | 15.45 | 16.22 | 16.50 | 17.91 |

END OF REPORT