

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: P907740

Luminaire Tested: DFN2DIP-4P4F0-030D050US840-RLFL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907740  
REPORT IS A COMBINATION OF REPORTS P899104 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-030D050US840-RLLFLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

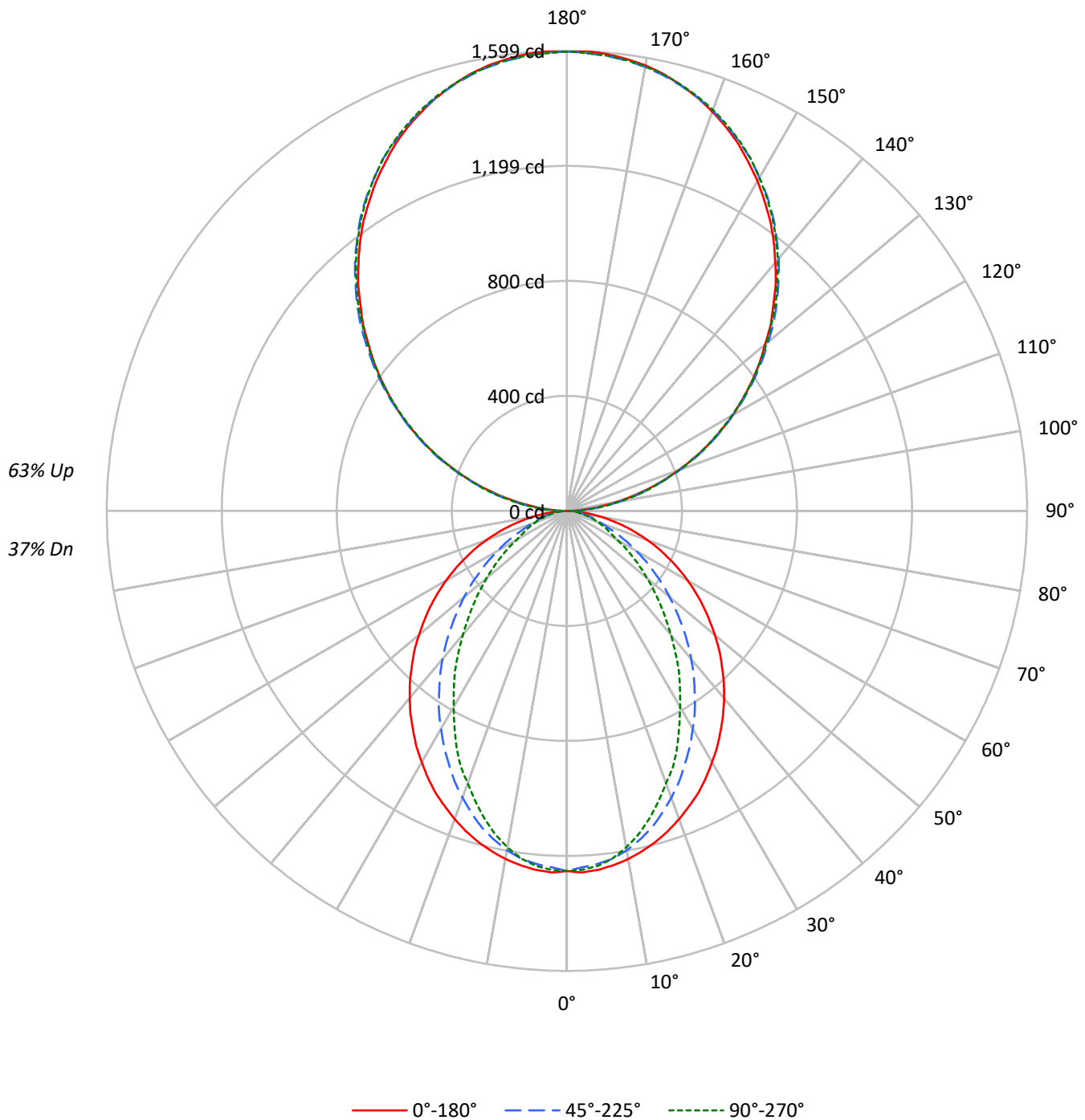
Lumens per Lamp: N/A  
Luminaire Lumens: 7043.8 lumens  
Efficiency: N/A  
Efficacy: 103.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 67.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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: P907740

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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 | 59 | 59 | 59 | 44 | 44 | 44 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 53 | 51 | 50 | 39 | 38 | 38 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 59 | 56 | 53 | 47 | 44 | 42 | 35 | 34 | 32 |
| 3   | 79  | 70  | 64  | 58  | 72 | 64 | 58 | 53 | 52 | 48 | 45 | 41 | 39 | 36 | 31 | 29 | 28 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 38 | 37 | 34 | 31 | 28 | 26 | 24 |
| 5   | 67  | 56  | 48  | 42  | 60 | 51 | 44 | 39 | 42 | 37 | 33 | 33 | 30 | 27 | 26 | 23 | 21 |
| 6   | 62  | 50  | 42  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 30 | 27 | 24 | 23 | 21 | 19 |
| 7   | 57  | 45  | 38  | 32  | 52 | 41 | 35 | 30 | 34 | 29 | 26 | 28 | 24 | 21 | 21 | 19 | 17 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 31 | 26 | 23 | 25 | 22 | 19 | 20 | 17 | 15 |
| 9   | 49  | 38  | 30  | 25  | 45 | 34 | 28 | 24 | 29 | 24 | 20 | 23 | 20 | 17 | 18 | 16 | 14 |
| 10  | 46  | 34  | 27  | 23  | 42 | 32 | 25 | 21 | 26 | 22 | 18 | 22 | 18 | 16 | 17 | 14 | 13 |

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

|     | 0°  | 45° | 90° |
|-----|-----|-----|-----|
| 0°  | 812 | 812 | 812 |
| 5°  | 814 | 800 | 805 |
| 10° | 806 | 784 | 779 |
| 15° | 795 | 759 | 739 |
| 20° | 780 | 723 | 689 |
| 25° | 765 | 683 | 642 |
| 30° | 745 | 642 | 581 |
| 35° | 725 | 598 | 528 |
| 40° | 705 | 553 | 466 |
| 45° | 682 | 502 | 411 |
| 50° | 658 | 451 | 357 |
| 55° | 633 | 397 | 305 |
| 60° | 603 | 340 | 251 |
| 65° | 570 | 282 | 226 |
| 70° | 530 | 228 | 205 |
| 75° | 479 | 201 | 187 |
| 80° | 405 | 169 | 164 |
| 85° | 283 | 115 | 125 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1208 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 117.4  | 1.7       |
| 10°-20°   | 322.1  | 4.6       |
| 20°-30°   | 452.3  | 6.4       |
| 30°-40°   | 493.0  | 7.0       |
| 40°-50°   | 453.1  | 6.4       |
| 50°-60°   | 355.9  | 5.1       |
| 60°-70°   | 231.6  | 3.3       |
| 70°-80°   | 119.2  | 1.7       |
| 80°-90°   | 35.0   | 0.5       |
| 90°-100°  | 98.8   | 1.4       |
| 100°-110° | 314.0  | 4.5       |
| 110°-120° | 537.3  | 7.6       |
| 120°-130° | 706.6  | 10.0      |
| 130°-140° | 793.2  | 11.3      |
| 140°-150° | 777.8  | 11.0      |
| 150°-160° | 652.5  | 9.3       |
| 160°-170° | 432.7  | 6.1       |
| 170°-180° | 151.2  | 2.1       |
| 0°-30°    | 891.8  | 12.7      |
| 0°-40°    | 1384.8 | 19.7      |
| 0°-60°    | 2193.8 | 31.1      |
| 0°-90°    | 2579.6 | 36.6      |
| 90°-120°  | 950.1  | 13.5      |
| 90°-150°  | 3227.7 | 45.8      |
| 90°-180°  | 4464.0 | 63.4      |
| 0°-180°   | 7043.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1252 | 1252  | 1252 | 1252  | 1252 |      |
| 5°   | 1252 | 1246  | 1232 | 1242  | 1238 | 119  |
| 15°  | 1191 | 1178  | 1140 | 1118  | 1107 | 336  |
| 25°  | 1081 | 1045  | 970  | 924   | 906  | 497  |
| 35°  | 932  | 874   | 774  | 703   | 678  | 583  |
| 45°  | 762  | 686   | 567  | 486   | 459  | 588  |
| 55°  | 579  | 491   | 368  | 300   | 279  | 517  |
| 65°  | 391  | 299   | 197  | 159   | 155  | 388  |
| 75°  | 208  | 129   | 91   | 83    | 82   | 220  |
| 85°  | 49   | 25    | 22   | 22    | 22   | 56   |
| 90°  | 1    | 17    | 47   | 44    | 46   | 7    |
| 95°  | 70   | 84    | 86   | 86    | 84   | 78   |
| 105° | 290  | 294   | 297  | 299   | 299  | 306  |
| 115° | 539  | 547   | 544  | 543   | 539  | 533  |
| 125° | 784  | 796   | 792  | 788   | 787  | 701  |
| 135° | 1014 | 1029  | 1032 | 1031  | 1027 | 784  |
| 145° | 1232 | 1241  | 1249 | 1250  | 1245 | 769  |
| 155° | 1408 | 1412  | 1416 | 1423  | 1419 | 648  |
| 165° | 1532 | 1530  | 1530 | 1540  | 1533 | 432  |
| 175° | 1594 | 1590  | 1587 | 1597  | 1589 | 151  |
| 180° | 1597 | 1597  | 1597 | 1597  | 1597 |      |

TEST NUMBER: P907740

CATALOG NUMBER: DFN2DIP-4P4F0-030D050US840-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1252.1 | 1252.1 | 1252.1 | 1252.1 | 1252.1 |
| 2.5°   | 1257.8 | 1252.1 | 1239.6 | 1251.0 | 1248.8 |
| 5°     | 1252.1 | 1246.5 | 1231.7 | 1241.9 | 1238.5 |
| 7.5°   | 1241.9 | 1235.2 | 1219.3 | 1223.8 | 1218.1 |
| 10°    | 1228.3 | 1220.4 | 1197.8 | 1194.3 | 1187.6 |
| 12.5°  | 1211.3 | 1201.1 | 1170.5 | 1163.8 | 1151.2 |
| 15°    | 1190.9 | 1178.4 | 1139.9 | 1118.4 | 1107.1 |
| 17.5°  | 1167.1 | 1149.0 | 1101.4 | 1076.5 | 1058.3 |
| 20°    | 1139.9 | 1117.2 | 1060.6 | 1032.4 | 1007.3 |
| 22.5°  | 1110.5 | 1084.4 | 1018.7 | 980.2  | 963.2  |
| 25°    | 1081.1 | 1044.7 | 970.0  | 923.5  | 906.5  |
| 27.5°  | 1045.9 | 1007.3 | 924.6  | 871.4  | 845.3  |
| 30°    | 1008.6 | 965.4  | 874.7  | 817.1  | 786.4  |
| 32.5°  | 972.2  | 920.1  | 827.3  | 759.2  | 730.8  |
| 35°    | 931.5  | 873.6  | 774.0  | 702.6  | 677.6  |
| 37.5°  | 891.8  | 829.4  | 724.1  | 645.8  | 617.6  |
| 40°    | 849.9  | 781.9  | 672.0  | 591.5  | 562.1  |
| 42.5°  | 806.8  | 734.4  | 619.9  | 535.9  | 507.7  |
| 45°    | 761.5  | 685.5  | 566.6  | 486.0  | 458.9  |
| 47.5°  | 718.4  | 638.0  | 515.6  | 435.1  | 410.2  |
| 50°    | 670.9  | 590.4  | 465.7  | 387.5  | 363.8  |
| 52.5°  | 624.3  | 539.4  | 418.2  | 343.4  | 321.8  |
| 55°    | 579.0  | 490.6  | 368.2  | 300.3  | 278.8  |
| 57.5°  | 532.6  | 441.9  | 324.2  | 260.6  | 242.5  |
| 60°    | 484.9  | 394.4  | 277.6  | 219.8  | 201.8  |
| 62.5°  | 438.6  | 347.9  | 237.9  | 183.6  | 174.6  |
| 65°    | 390.9  | 299.1  | 197.1  | 158.6  | 155.2  |
| 67.5°  | 345.7  | 253.8  | 158.6  | 139.4  | 135.9  |
| 70°    | 298.0  | 209.6  | 131.4  | 120.1  | 115.5  |
| 72.5°  | 252.7  | 168.7  | 109.9  | 100.9  | 98.6   |
| 75°    | 208.4  | 129.2  | 90.7   | 82.7   | 81.6   |
| 77.5°  | 164.3  | 91.7   | 71.4   | 66.9   | 64.5   |
| 80°    | 123.5  | 65.7   | 54.3   | 49.9   | 49.9   |
| 82.5°  | 86.0   | 44.2   | 37.4   | 35.1   | 35.1   |
| 85°    | 48.7   | 24.8   | 21.5   | 21.5   | 21.5   |
| 87.5°  | 18.2   | 9.0    | 9.0    | 8.0    | 8.0    |
| 90°    | 1.4    | 17.4   | 47.2   | 44.3   | 45.7   |
| 92.5°  | 29.9   | 40.4   | 41.9   | 43.3   | 43.3   |
| 95°    | 70.3   | 83.8   | 86.1   | 86.1   | 83.8   |
| 97.5°  | 116.9  | 129.5  | 134.8  | 134.8  | 134.8  |
| 100°   | 170.9  | 182.0  | 185.8  | 185.8  | 184.4  |
| 102.5° | 227.7  | 235.9  | 241.2  | 242.7  | 241.2  |
| 105°   | 289.8  | 293.7  | 296.6  | 298.9  | 298.9  |
| 107.5° | 351.4  | 357.2  | 357.2  | 358.2  | 351.4  |
| 110°   | 411.1  | 418.9  | 418.9  | 418.9  | 415.0  |

TEST NUMBER: P907740

CATALOG NUMBER: DFN2DIP-4P4F0-030D050US840-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 475.6  | 483.8  | 482.4  | 478.6  | 475.6  |
| 115°   | 539.2  | 546.9  | 544.5  | 543.1  | 539.2  |
| 117.5° | 602.3  | 612.9  | 606.1  | 602.3  | 598.4  |
| 120°   | 665.8  | 676.4  | 665.8  | 665.8  | 661.5  |
| 122.5° | 723.6  | 737.1  | 730.3  | 726.5  | 723.6  |
| 125°   | 784.3  | 796.3  | 792.4  | 788.1  | 786.7  |
| 127.5° | 843.4  | 858.4  | 853.1  | 847.3  | 843.4  |
| 130°   | 898.9  | 916.2  | 913.7  | 910.9  | 905.5  |
| 132.5° | 961.0  | 974.4  | 975.4  | 968.7  | 964.8  |
| 135°   | 1014.4 | 1029.3 | 1032.2 | 1030.8 | 1026.9 |
| 137.5° | 1074.1 | 1086.1 | 1088.5 | 1087.5 | 1081.8 |
| 140°   | 1126.5 | 1138.6 | 1145.3 | 1145.3 | 1140.0 |
| 142.5° | 1180.4 | 1192.6 | 1196.4 | 1197.8 | 1192.6 |
| 145°   | 1231.5 | 1241.1 | 1248.8 | 1250.3 | 1245.0 |
| 147.5° | 1277.3 | 1289.3 | 1295.1 | 1297.5 | 1292.1 |
| 150°   | 1324.4 | 1332.6 | 1337.9 | 1342.2 | 1337.9 |
| 152.5° | 1366.3 | 1374.5 | 1381.2 | 1386.5 | 1381.2 |
| 155°   | 1408.2 | 1412.0 | 1416.3 | 1423.1 | 1418.8 |
| 157.5° | 1444.3 | 1447.1 | 1449.6 | 1459.3 | 1452.5 |
| 160°   | 1476.5 | 1479.5 | 1480.9 | 1489.0 | 1483.3 |
| 162.5° | 1506.4 | 1506.4 | 1507.8 | 1517.0 | 1510.3 |
| 165°   | 1532.0 | 1530.5 | 1530.5 | 1540.1 | 1533.4 |
| 167.5° | 1555.0 | 1550.6 | 1550.6 | 1560.3 | 1553.6 |
| 170°   | 1572.4 | 1568.5 | 1567.1 | 1576.7 | 1568.5 |
| 172.5° | 1584.4 | 1580.5 | 1579.1 | 1588.7 | 1580.5 |
| 175°   | 1594.1 | 1590.1 | 1587.3 | 1596.9 | 1588.7 |
| 177.5° | 1599.3 | 1595.5 | 1592.6 | 1600.7 | 1592.6 |
| 180°   | 1596.9 | 1596.9 | 1596.9 | 1596.9 | 1596.9 |

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CATALOG NUMBER: DFN2DIP-4P4F0-030D050US840-RLLFLL

**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 | 5.05             | 5.78 | 6.12 | 6.85 | 8.30  | 1.01           | 1.74 | 2.08 | 2.81 | 4.26 |
|                 | 3H   | 6.72             | 7.38 | 7.80 | 8.45 | 9.92  | 2.19           | 2.84 | 3.27 | 3.92 | 5.39 |
|                 | 4H   | 7.33             | 7.95 | 8.42 | 9.03 | 10.51 | 2.64           | 3.26 | 3.73 | 4.34 | 5.81 |
|                 | 6H   | 7.75             | 8.32 | 8.85 | 9.40 | 10.89 | 2.95           | 3.52 | 4.05 | 4.61 | 6.09 |
|                 | 8H   | 7.88             | 8.42 | 8.98 | 9.52 | 11.00 | 3.04           | 3.59 | 4.15 | 4.68 | 6.17 |
|                 | 12H  | 7.94             | 8.45 | 9.05 | 9.54 | 11.05 | 3.08           | 3.60 | 4.19 | 4.69 | 6.20 |
| 4H              | 2H   | 5.05             | 5.67 | 6.15 | 6.75 | 8.23  | 1.59           | 2.21 | 2.69 | 3.29 | 4.77 |
|                 | 3H   | 6.88             | 7.40 | 7.98 | 8.50 | 9.99  | 2.94           | 3.45 | 4.04 | 4.56 | 6.05 |
|                 | 4H   | 7.57             | 8.05 | 8.68 | 9.14 | 10.65 | 3.48           | 3.96 | 4.59 | 5.05 | 6.56 |
|                 | 6H   | 8.09             | 8.49 | 9.20 | 9.61 | 11.11 | 3.90           | 4.30 | 5.01 | 5.42 | 6.93 |
|                 | 8H   | 8.26             | 8.64 | 9.38 | 9.75 | 11.27 | 4.03           | 4.41 | 5.14 | 5.52 | 7.03 |
|                 | 12H  | 8.36             | 8.70 | 9.49 | 9.82 | 11.35 | 4.09           | 4.43 | 5.22 | 5.55 | 7.08 |
| 8H              | 4H   | 7.53             | 7.91 | 8.65 | 9.02 | 10.54 | 3.76           | 4.14 | 4.87 | 5.25 | 6.77 |
|                 | 6H   | 8.10             | 8.41 | 9.24 | 9.57 | 11.08 | 4.28           | 4.59 | 5.41 | 5.74 | 7.26 |
|                 | 8H   | 8.32             | 8.59 | 9.46 | 9.73 | 11.26 | 4.47           | 4.74 | 5.61 | 5.88 | 7.41 |
|                 | 12H  | 8.46             | 8.70 | 9.61 | 9.83 | 11.40 | 4.59           | 4.83 | 5.73 | 5.95 | 7.53 |
| 12H             | 4H   | 7.48             | 7.82 | 8.61 | 8.95 | 10.47 | 3.76           | 4.10 | 4.89 | 5.23 | 6.75 |
|                 | 6H   | 8.08             | 8.35 | 9.22 | 9.48 | 11.02 | 4.33           | 4.60 | 5.47 | 5.73 | 7.27 |
|                 | 8H   | 8.30             | 8.54 | 9.44 | 9.67 | 11.24 | 4.54           | 4.78 | 5.68 | 5.90 | 7.48 |

END OF REPORT