

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: P920952

Luminaire Tested: DFN2DIP-TR4F0-050D050US935-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920952  
REPORT IS A COMBINATION OF REPORTS P900390 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-050D050US935-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

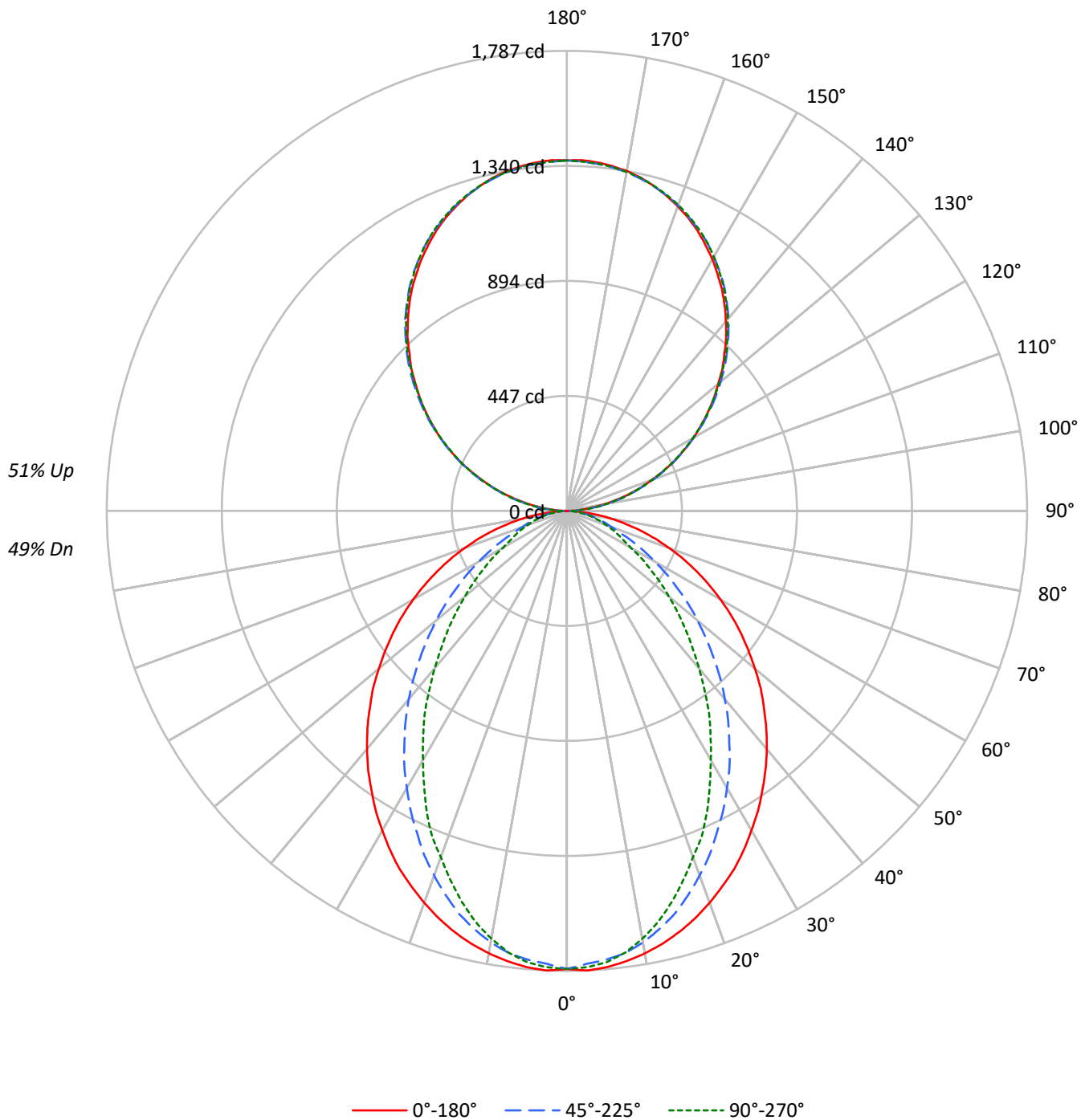
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7469.1 lumens  
Efficiency: N/A  
Efficacy: 93.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 79.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P920952

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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1414 | 1414 | 1414 |
| 5°  | 1416 | 1391 | 1400 |
| 10° | 1402 | 1364 | 1354 |
| 15° | 1382 | 1319 | 1284 |
| 20° | 1357 | 1257 | 1197 |
| 25° | 1331 | 1187 | 1114 |
| 30° | 1296 | 1115 | 1008 |
| 35° | 1261 | 1039 | 915  |
| 40° | 1226 | 959  | 808  |
| 45° | 1186 | 871  | 712  |
| 50° | 1144 | 782  | 617  |
| 55° | 1100 | 687  | 527  |
| 60° | 1049 | 587  | 433  |
| 65° | 991  | 487  | 390  |
| 70° | 920  | 392  | 353  |
| 75° | 831  | 346  | 321  |
| 80° | 702  | 290  | 278  |
| 85° | 489  | 194  | 209  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1186 cd/sqm

TEST NUMBER: P920952

CATALOG NUMBER: DFN2DIP-TR4F0-050D050US935-RLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 166.8  | 2.2       |
| 10°-20°   | 457.8  | 6.1       |
| 20°-30°   | 642.7  | 8.6       |
| 30°-40°   | 700.6  | 9.4       |
| 40°-50°   | 643.9  | 8.6       |
| 50°-60°   | 505.7  | 6.8       |
| 60°-70°   | 329.2  | 4.4       |
| 70°-80°   | 169.5  | 2.3       |
| 80°-90°   | 47.1   | 0.6       |
| 90°-100°  | 84.2   | 1.1       |
| 100°-110° | 267.7  | 3.6       |
| 110°-120° | 458.1  | 6.1       |
| 120°-130° | 602.5  | 8.1       |
| 130°-140° | 676.3  | 9.1       |
| 140°-150° | 663.1  | 8.9       |
| 150°-160° | 556.3  | 7.4       |
| 160°-170° | 368.9  | 4.9       |
| 170°-180° | 128.9  | 1.7       |
| 0°-30°    | 1267.2 | 17.0      |
| 0°-40°    | 1967.8 | 26.3      |
| 0°-60°    | 3117.4 | 41.7      |
| 0°-90°    | 3663.1 | 49.0      |
| 90°-120°  | 810.0  | 10.8      |
| 90°-150°  | 2751.9 | 36.8      |
| 90°-180°  | 3806.0 | 51.0      |
| 0°-180°   | 7469.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1779 | 1779  | 1779 | 1779  | 1779 |      |
| 5°   | 1779 | 1771  | 1750 | 1765  | 1760 | 169  |
| 15°  | 1692 | 1675  | 1620 | 1589  | 1573 | 477  |
| 25°  | 1536 | 1484  | 1378 | 1312  | 1288 | 706  |
| 35°  | 1324 | 1242  | 1100 | 998   | 963  | 828  |
| 45°  | 1082 | 974   | 805  | 691   | 652  | 836  |
| 55°  | 823  | 697   | 523  | 427   | 396  | 735  |
| 65°  | 556  | 425   | 280  | 226   | 221  | 551  |
| 75°  | 296  | 184   | 129  | 118   | 116  | 313  |
| 85°  | 69   | 35    | 31   | 31    | 31   | 79   |
| 90°  | 1    | 15    | 40   | 38    | 39   | 7    |
| 95°  | 60   | 72    | 73   | 73    | 72   | 67   |
| 105° | 247  | 250   | 253  | 255   | 255  | 261  |
| 115° | 460  | 466   | 464  | 463   | 460  | 455  |
| 125° | 669  | 679   | 676  | 672   | 671  | 598  |
| 135° | 865  | 878   | 880  | 879   | 876  | 669  |
| 145° | 1050 | 1058  | 1065 | 1066  | 1061 | 656  |
| 155° | 1201 | 1204  | 1208 | 1213  | 1210 | 553  |
| 165° | 1306 | 1305  | 1305 | 1313  | 1307 | 368  |
| 175° | 1359 | 1356  | 1353 | 1362  | 1354 | 129  |
| 180° | 1362 | 1362  | 1362 | 1362  | 1362 |      |

TEST NUMBER: P920952

CATALOG NUMBER: DFN2DIP-TR4F0-050D050US935-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1779.3 | 1779.3 | 1779.3 | 1779.3 | 1779.3 |
| 2.5°   | 1787.3 | 1779.3 | 1761.5 | 1777.7 | 1774.4 |
| 5°     | 1779.3 | 1771.2 | 1750.2 | 1764.7 | 1760.0 |
| 7.5°   | 1764.7 | 1755.1 | 1732.6 | 1739.0 | 1730.9 |
| 10°    | 1745.4 | 1734.1 | 1702.0 | 1697.1 | 1687.5 |
| 12.5°  | 1721.3 | 1706.8 | 1663.3 | 1653.7 | 1635.9 |
| 15°    | 1692.3 | 1674.6 | 1619.9 | 1589.3 | 1573.2 |
| 17.5°  | 1658.5 | 1632.7 | 1565.0 | 1529.6 | 1503.8 |
| 20°    | 1619.9 | 1587.6 | 1507.1 | 1467.0 | 1431.4 |
| 22.5°  | 1578.0 | 1540.9 | 1447.5 | 1392.8 | 1368.7 |
| 25°    | 1536.1 | 1484.5 | 1378.3 | 1312.3 | 1288.1 |
| 27.5°  | 1486.3 | 1431.4 | 1313.9 | 1238.2 | 1201.2 |
| 30°    | 1433.1 | 1371.8 | 1243.0 | 1161.0 | 1117.4 |
| 32.5°  | 1381.6 | 1307.4 | 1175.5 | 1078.8 | 1038.5 |
| 35°    | 1323.6 | 1241.5 | 1099.8 | 998.3  | 962.9  |
| 37.5°  | 1267.2 | 1178.6 | 1029.0 | 917.7  | 877.6  |
| 40°    | 1207.6 | 1111.1 | 954.8  | 840.5  | 798.7  |
| 42.5°  | 1146.5 | 1043.4 | 880.8  | 761.6  | 721.4  |
| 45°    | 1082.1 | 974.1  | 805.1  | 690.7  | 652.0  |
| 47.5°  | 1020.9 | 906.6  | 732.7  | 618.3  | 582.9  |
| 50°    | 953.3  | 839.0  | 661.8  | 550.6  | 516.9  |
| 52.5°  | 887.2  | 766.4  | 594.2  | 487.9  | 457.4  |
| 55°    | 822.8  | 697.1  | 523.2  | 426.7  | 396.1  |
| 57.5°  | 756.8  | 628.0  | 460.5  | 370.4  | 344.6  |
| 60°    | 689.1  | 560.3  | 394.4  | 312.5  | 286.6  |
| 62.5°  | 623.2  | 494.4  | 338.1  | 260.9  | 248.1  |
| 65°    | 555.5  | 425.1  | 280.2  | 225.5  | 220.6  |
| 67.5°  | 491.1  | 360.7  | 225.5  | 198.0  | 193.2  |
| 70°    | 423.5  | 297.9  | 186.8  | 170.6  | 164.2  |
| 72.5°  | 359.1  | 239.9  | 156.2  | 143.4  | 140.1  |
| 75°    | 296.3  | 183.5  | 128.8  | 117.5  | 116.0  |
| 77.5°  | 233.5  | 130.4  | 101.5  | 95.0   | 91.7   |
| 80°    | 175.5  | 93.4   | 77.2   | 70.9   | 70.9   |
| 82.5°  | 122.3  | 62.9   | 53.1   | 49.9   | 49.9   |
| 85°    | 69.2   | 35.4   | 30.6   | 30.6   | 30.6   |
| 87.5°  | 25.8   | 12.8   | 12.8   | 11.3   | 11.3   |
| 90°    | 1.2    | 14.8   | 40.2   | 37.8   | 39.0   |
| 92.5°  | 25.5   | 34.4   | 35.7   | 36.9   | 36.9   |
| 95°    | 59.9   | 71.5   | 73.4   | 73.4   | 71.5   |
| 97.5°  | 99.7   | 110.4  | 114.9  | 114.9  | 114.9  |
| 100°   | 145.7  | 155.2  | 158.4  | 158.4  | 157.2  |
| 102.5° | 194.2  | 201.1  | 205.6  | 206.9  | 205.6  |
| 105°   | 247.1  | 250.4  | 252.9  | 254.9  | 254.9  |
| 107.5° | 299.6  | 304.5  | 304.5  | 305.4  | 299.6  |
| 110°   | 350.5  | 357.1  | 357.1  | 357.1  | 353.8  |

TEST NUMBER: P920952

CATALOG NUMBER: DFN2DIP-TR4F0-050D050US935-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 405.5  | 412.5  | 411.3  | 408.0  | 405.5  |
| 115°   | 459.7  | 466.3  | 464.3  | 463.0  | 459.7  |
| 117.5° | 513.5  | 522.5  | 516.8  | 513.5  | 510.2  |
| 120°   | 567.7  | 576.7  | 567.7  | 567.7  | 564.0  |
| 122.5° | 616.9  | 628.4  | 622.7  | 619.4  | 616.9  |
| 125°   | 668.7  | 678.9  | 675.6  | 671.9  | 670.7  |
| 127.5° | 719.1  | 731.8  | 727.4  | 722.4  | 719.1  |
| 130°   | 766.4  | 781.1  | 779.0  | 776.6  | 772.1  |
| 132.5° | 819.3  | 830.8  | 831.6  | 825.9  | 822.6  |
| 135°   | 864.9  | 877.5  | 880.0  | 878.8  | 875.5  |
| 137.5° | 915.8  | 926.0  | 928.1  | 927.2  | 922.3  |
| 140°   | 960.4  | 970.8  | 976.5  | 976.5  | 972.0  |
| 142.5° | 1006.4 | 1016.8 | 1020.0 | 1021.2 | 1016.8 |
| 145°   | 1050.0 | 1058.2 | 1064.7 | 1066.0 | 1061.4 |
| 147.5° | 1089.0 | 1099.2 | 1104.1 | 1106.2 | 1101.6 |
| 150°   | 1129.2 | 1136.2 | 1140.6 | 1144.4 | 1140.6 |
| 152.5° | 1164.9 | 1171.9 | 1177.6 | 1182.2 | 1177.6 |
| 155°   | 1200.6 | 1203.8 | 1207.5 | 1213.3 | 1209.6 |
| 157.5° | 1231.4 | 1233.8 | 1235.9 | 1244.1 | 1238.4 |
| 160°   | 1258.9 | 1261.4 | 1262.6 | 1269.5 | 1264.6 |
| 162.5° | 1284.4 | 1284.4 | 1285.6 | 1293.4 | 1287.6 |
| 165°   | 1306.1 | 1304.8 | 1304.8 | 1313.1 | 1307.3 |
| 167.5° | 1325.8 | 1322.1 | 1322.1 | 1330.3 | 1324.6 |
| 170°   | 1340.6 | 1337.3 | 1336.1 | 1344.3 | 1337.3 |
| 172.5° | 1350.8 | 1347.5 | 1346.3 | 1354.5 | 1347.5 |
| 175°   | 1359.1 | 1355.7 | 1353.3 | 1361.5 | 1354.5 |
| 177.5° | 1363.6 | 1360.3 | 1357.8 | 1364.8 | 1357.8 |
| 180°   | 1361.5 | 1361.5 | 1361.5 | 1361.5 | 1361.5 |

TEST NUMBER: P920952

CATALOG NUMBER: DFN2DIP-TR4F0-050D050US935-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 | 8.25             | 9.08  | 9.22  | 10.06 | 11.34 | 4.23           | 5.05 | 5.20 | 6.03 | 7.32  |
|                 | 3H   | 9.93             | 10.66 | 10.91 | 11.65 | 12.96 | 5.41           | 6.15 | 6.40 | 7.14 | 8.45  |
|                 | 4H   | 10.54            | 11.23 | 11.53 | 12.23 | 13.54 | 5.87           | 6.56 | 6.86 | 7.56 | 8.87  |
|                 | 6H   | 10.96            | 11.60 | 11.97 | 12.60 | 13.93 | 6.19           | 6.83 | 7.19 | 7.83 | 9.16  |
|                 | 8H   | 11.08            | 11.69 | 12.10 | 12.71 | 14.03 | 6.28           | 6.89 | 7.29 | 7.90 | 9.23  |
|                 | 12H  | 11.15            | 11.72 | 12.16 | 12.73 | 14.08 | 6.32           | 6.90 | 7.34 | 7.91 | 9.26  |
| 4H              | 2H   | 8.27             | 8.97  | 9.27  | 9.96  | 11.28 | 4.82           | 5.52 | 5.82 | 6.51 | 7.83  |
|                 | 3H   | 10.10            | 10.68 | 11.11 | 11.70 | 13.03 | 6.17           | 6.75 | 7.18 | 7.77 | 9.10  |
|                 | 4H   | 10.79            | 11.32 | 11.81 | 12.33 | 13.69 | 6.72           | 7.25 | 7.74 | 8.26 | 9.62  |
|                 | 6H   | 11.30            | 11.76 | 12.33 | 12.80 | 14.15 | 7.14           | 7.59 | 8.17 | 8.63 | 9.98  |
|                 | 8H   | 11.48            | 11.90 | 12.51 | 12.94 | 14.30 | 7.27           | 7.69 | 8.30 | 8.72 | 10.09 |
|                 | 12H  | 11.57            | 11.96 | 12.62 | 13.00 | 14.37 | 7.33           | 7.72 | 8.38 | 8.76 | 10.13 |
| 8H              | 4H   | 10.76            | 11.18 | 11.79 | 12.21 | 13.58 | 7.00           | 7.42 | 8.03 | 8.45 | 9.82  |
|                 | 6H   | 11.32            | 11.67 | 12.38 | 12.75 | 14.11 | 7.52           | 7.87 | 8.57 | 8.94 | 10.30 |
|                 | 8H   | 11.54            | 11.85 | 12.60 | 12.91 | 14.29 | 7.71           | 8.02 | 8.77 | 9.08 | 10.46 |
|                 | 12H  | 11.68            | 11.95 | 12.74 | 13.00 | 14.43 | 7.83           | 8.10 | 8.89 | 9.15 | 10.58 |
| 12H             | 4H   | 10.71            | 11.09 | 11.76 | 12.14 | 13.51 | 7.00           | 7.39 | 8.05 | 8.43 | 9.80  |
|                 | 6H   | 11.30            | 11.61 | 12.36 | 12.67 | 14.05 | 7.57           | 7.87 | 8.63 | 8.93 | 10.32 |
|                 | 8H   | 11.52            | 11.79 | 12.58 | 12.84 | 14.27 | 7.78           | 8.05 | 8.84 | 9.10 | 10.53 |

END OF REPORT