

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: P913149

Luminaire Tested: DFN2DIP-4P3F0-050D020US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913149  
REPORT IS A COMBINATION OF REPORTS P900556 AND P897473  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-050D020US927-RLLONL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

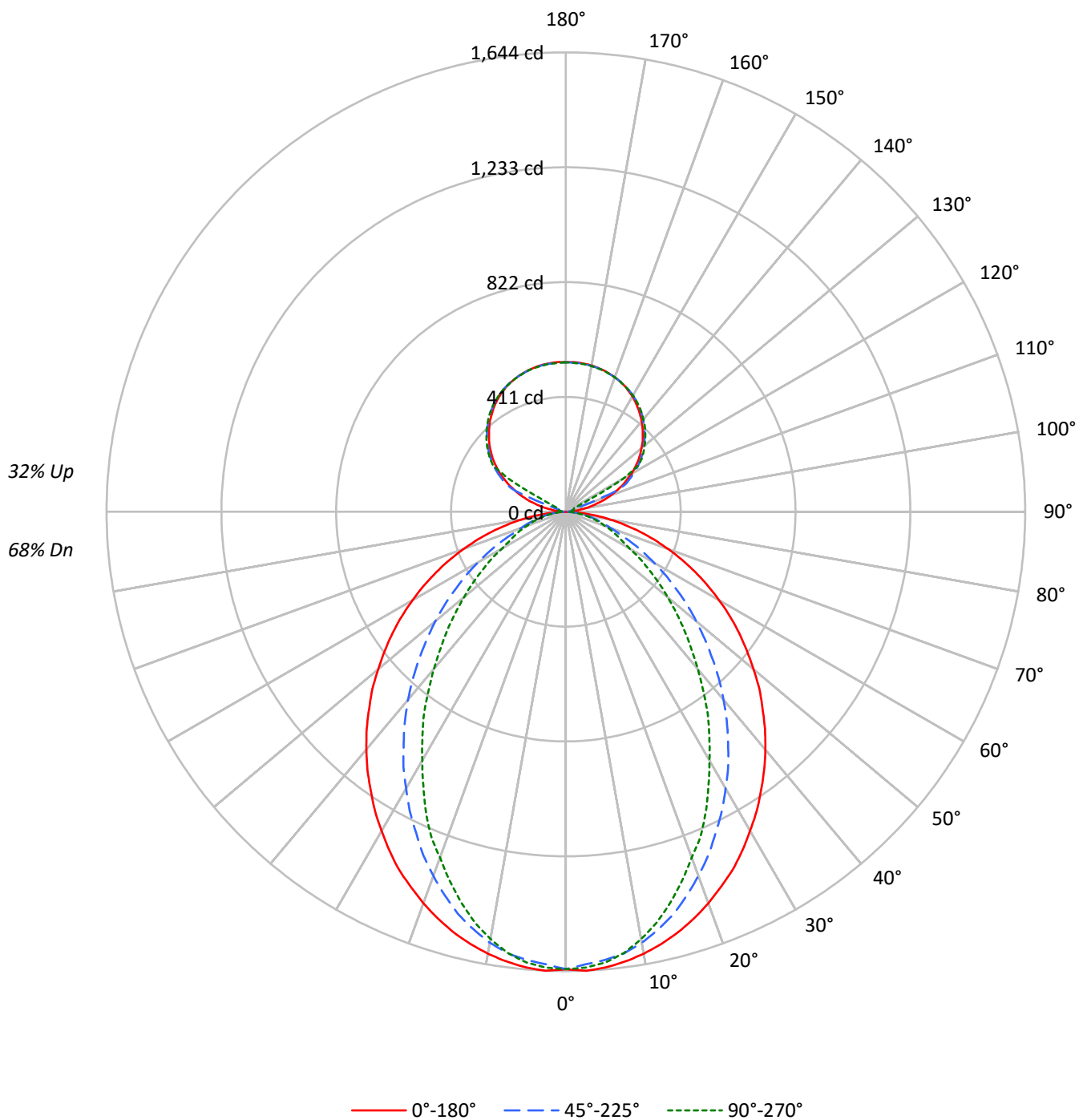
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4935.3 lumens  
Efficiency: N/A  
Efficacy: 76.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 64.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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: P913149

CATALOG NUMBER: DFN2DIP-4P3F0-050D020US927-RLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     |    | 20 |    |    |    |    | 20 |    |    |    |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     |    | 50 |    |    |    |    | 30 |    |    |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 111 | 111 | 111 | 111 | 105 | 105 | 105 | 105 | 93 | 93 | 93 | 83 | 83 | 83 | 73 | 73 | 73 | 65 | 65 | 65 |
| 1   | 103 | 98  | 95  | 91  | 97  | 93  | 90  | 87  | 83 | 81 | 78 | 74 | 72 | 70 | 65 | 64 | 63 | 59 | 58 | 57 |
| 2   | 94  | 87  | 81  | 76  | 88  | 82  | 77  | 72  | 74 | 69 | 66 | 66 | 63 | 60 | 58 | 56 | 54 | 50 | 49 | 48 |
| 3   | 86  | 77  | 70  | 64  | 81  | 73  | 66  | 61  | 66 | 60 | 56 | 59 | 55 | 51 | 52 | 49 | 47 | 43 | 42 | 41 |
| 4   | 79  | 69  | 61  | 55  | 75  | 65  | 58  | 53  | 59 | 53 | 49 | 53 | 48 | 45 | 47 | 44 | 41 | 38 | 37 | 36 |
| 5   | 73  | 62  | 53  | 48  | 69  | 59  | 51  | 46  | 53 | 47 | 42 | 48 | 43 | 39 | 43 | 39 | 36 | 33 | 32 | 31 |
| 6   | 68  | 56  | 47  | 42  | 64  | 53  | 46  | 40  | 48 | 42 | 38 | 43 | 39 | 35 | 39 | 35 | 32 | 30 | 29 | 28 |
| 7   | 63  | 50  | 43  | 37  | 59  | 48  | 41  | 36  | 44 | 38 | 33 | 40 | 35 | 31 | 36 | 32 | 29 | 26 | 25 | 24 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 30 | 37 | 32 | 28 | 33 | 29 | 26 | 24 | 23 | 22 |
| 9   | 55  | 42  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 27 | 34 | 29 | 25 | 31 | 27 | 24 | 22 | 21 | 20 |
| 10  | 51  | 39  | 32  | 27  | 48  | 37  | 31  | 26  | 34 | 29 | 25 | 31 | 27 | 23 | 29 | 25 | 22 | 20 | 19 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1866 | 1866 | 1866 |
| 5°  | 1867 | 1835 | 1847 |
| 10° | 1848 | 1798 | 1786 |
| 15° | 1821 | 1737 | 1693 |
| 20° | 1786 | 1654 | 1578 |
| 25° | 1751 | 1561 | 1468 |
| 30° | 1703 | 1466 | 1328 |
| 35° | 1656 | 1364 | 1205 |
| 40° | 1609 | 1258 | 1064 |
| 45° | 1554 | 1141 | 936  |
| 50° | 1497 | 1023 | 812  |
| 55° | 1437 | 897  | 692  |
| 60° | 1368 | 766  | 569  |
| 65° | 1288 | 633  | 512  |
| 70° | 1192 | 508  | 462  |
| 75° | 1070 | 445  | 419  |
| 80° | 894  | 370  | 361  |
| 85° | 607  | 241  | 268  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1554 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 153.4  | 3.1       |
| 10°-20°   | 421.2  | 8.5       |
| 20°-30°   | 591.3  | 12.0      |
| 30°-40°   | 644.6  | 13.1      |
| 40°-50°   | 592.4  | 12.0      |
| 50°-60°   | 465.3  | 9.4       |
| 60°-70°   | 302.9  | 6.1       |
| 70°-80°   | 155.9  | 3.2       |
| 80°-90°   | 40.8   | 0.8       |
| 90°-100°  | 17.6   | 0.4       |
| 100°-110° | 65.7   | 1.3       |
| 110°-120° | 174.3  | 3.5       |
| 120°-130° | 289.1  | 5.9       |
| 130°-140° | 307.1  | 6.2       |
| 140°-150° | 285.4  | 5.8       |
| 150°-160° | 229.5  | 4.6       |
| 160°-170° | 147.9  | 3.0       |
| 170°-180° | 50.9   | 1.0       |
| 0°-30°    | 1165.9 | 23.6      |
| 0°-40°    | 1810.5 | 36.7      |
| 0°-60°    | 2868.2 | 58.1      |
| 0°-90°    | 3367.7 | 68.2      |
| 90°-120°  | 257.7  | 5.2       |
| 90°-150°  | 1139.3 | 23.1      |
| 90°-180°  | 1568.0 | 31.8      |
| 0°-180°   | 4935.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1637 | 1637  | 1637 | 1637  | 1637 |      |
| 5°   | 1637 | 1630  | 1610 | 1624  | 1619 | 155  |
| 15°  | 1557 | 1541  | 1490 | 1462  | 1448 | 439  |
| 25°  | 1413 | 1366  | 1268 | 1207  | 1185 | 650  |
| 35°  | 1218 | 1142  | 1012 | 918   | 886  | 762  |
| 45°  | 996  | 896   | 741  | 636   | 600  | 769  |
| 55°  | 757  | 641   | 481  | 393   | 364  | 676  |
| 65°  | 511  | 391   | 258  | 208   | 203  | 507  |
| 75°  | 273  | 169   | 118  | 108   | 107  | 288  |
| 85°  | 64   | 33    | 28   | 28    | 28   | 73   |
| 90°  | 0    | 5     | 8    | 10    | 10   | 5    |
| 95°  | 25   | 12    | 15   | 17    | 17   | 30   |
| 105° | 118  | 129   | 24   | 28    | 29   | 126  |
| 115° | 222  | 229   | 239  | 60    | 32   | 219  |
| 125° | 315  | 320   | 327  | 330   | 331  | 281  |
| 135° | 389  | 396   | 399  | 403   | 402  | 301  |
| 145° | 452  | 451   | 458  | 460   | 458  | 282  |
| 155° | 497  | 494   | 498  | 501   | 498  | 229  |
| 165° | 524  | 522   | 523  | 526   | 523  | 148  |
| 175° | 536  | 533   | 534  | 537   | 533  | 51   |
| 180° | 535  | 535   | 535  | 535   | 535  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1637.0 | 1637.0 | 1637.0 | 1637.0 | 1637.0 |
| 2.5°   | 1644.4 | 1637.0 | 1620.7 | 1635.6 | 1632.6 |
| 5°     | 1637.0 | 1629.7 | 1610.3 | 1623.7 | 1619.3 |
| 7.5°   | 1623.7 | 1614.9 | 1594.1 | 1600.0 | 1592.5 |
| 10°    | 1605.9 | 1595.5 | 1566.0 | 1561.5 | 1552.6 |
| 12.5°  | 1583.7 | 1570.4 | 1530.3 | 1521.5 | 1505.1 |
| 15°    | 1557.0 | 1540.7 | 1490.4 | 1462.3 | 1447.5 |
| 17.5°  | 1525.9 | 1502.2 | 1439.9 | 1407.4 | 1383.6 |
| 20°    | 1490.4 | 1460.7 | 1386.6 | 1349.7 | 1317.0 |
| 22.5°  | 1451.9 | 1417.8 | 1331.8 | 1281.5 | 1259.3 |
| 25°    | 1413.3 | 1365.9 | 1268.1 | 1207.4 | 1185.1 |
| 27.5°  | 1367.5 | 1317.0 | 1208.9 | 1139.2 | 1105.2 |
| 30°    | 1318.6 | 1262.2 | 1143.7 | 1068.2 | 1028.1 |
| 32.5°  | 1271.1 | 1202.9 | 1081.6 | 992.6  | 955.5  |
| 35°    | 1217.8 | 1142.2 | 1011.9 | 918.5  | 885.9  |
| 37.5°  | 1165.9 | 1084.4 | 946.7  | 844.4  | 807.5  |
| 40°    | 1111.1 | 1022.3 | 878.4  | 773.3  | 734.8  |
| 42.5°  | 1054.9 | 960.0  | 810.4  | 700.7  | 663.8  |
| 45°    | 995.6  | 896.3  | 740.8  | 635.5  | 599.9  |
| 47.5°  | 939.3  | 834.2  | 674.1  | 568.9  | 536.3  |
| 50°    | 877.1  | 771.9  | 608.9  | 506.6  | 475.6  |
| 52.5°  | 816.3  | 705.1  | 546.7  | 448.9  | 420.8  |
| 55°    | 757.0  | 641.4  | 481.4  | 392.6  | 364.5  |
| 57.5°  | 696.3  | 577.8  | 423.7  | 340.8  | 317.0  |
| 60°    | 634.1  | 515.6  | 362.9  | 287.5  | 263.7  |
| 62.5°  | 573.4  | 454.9  | 311.1  | 240.0  | 228.2  |
| 65°    | 511.1  | 391.1  | 257.8  | 207.5  | 203.0  |
| 67.5°  | 451.9  | 331.8  | 207.5  | 182.2  | 177.8  |
| 70°    | 389.7  | 274.1  | 171.8  | 157.0  | 151.1  |
| 72.5°  | 330.4  | 220.7  | 143.7  | 131.9  | 128.9  |
| 75°    | 272.6  | 168.8  | 118.5  | 108.1  | 106.7  |
| 77.5°  | 214.8  | 119.9  | 93.4   | 87.4   | 84.4   |
| 80°    | 161.4  | 86.0   | 71.1   | 65.2   | 65.2   |
| 82.5°  | 112.6  | 57.8   | 48.9   | 45.9   | 45.9   |
| 85°    | 63.7   | 32.6   | 28.1   | 28.1   | 28.1   |
| 87.5°  | 23.8   | 11.8   | 11.8   | 10.4   | 10.4   |
| 90°    | 0.4    | 4.7    | 7.7    | 9.7    | 10.5   |
| 92.5°  | 9.7    | 8.2    | 9.3    | 10.1   | 10.5   |
| 95°    | 25.1   | 12.4   | 15.1   | 17.0   | 16.6   |
| 97.5°  | 45.2   | 13.5   | 19.7   | 20.9   | 21.3   |
| 100°   | 68.5   | 15.4   | 22.0   | 25.1   | 25.9   |
| 102.5° | 94.0   | 93.2   | 22.8   | 27.1   | 28.3   |
| 105°   | 117.6  | 129.2  | 23.6   | 27.8   | 29.4   |
| 107.5° | 145.1  | 154.7  | 24.4   | 28.6   | 30.2   |
| 110°   | 171.4  | 179.5  | 67.7   | 29.1   | 30.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 196.1 | 203.1 | 196.5 | 29.8  | 31.0  |
| 115°   | 222.4 | 229.0 | 238.8 | 59.6  | 31.8  |
| 117.5° | 245.3 | 253.0 | 259.6 | 204.3 | 102.9 |
| 120°   | 270.8 | 276.6 | 283.6 | 288.3 | 236.0 |
| 122.5° | 292.5 | 298.7 | 306.4 | 308.7 | 309.2 |
| 125°   | 314.6 | 319.6 | 326.9 | 329.6 | 330.8 |
| 127.5° | 334.7 | 340.1 | 345.9 | 349.7 | 350.1 |
| 130°   | 353.6 | 359.8 | 364.1 | 368.4 | 368.0 |
| 132.5° | 373.0 | 378.0 | 382.2 | 385.7 | 385.4 |
| 135°   | 389.3 | 395.5 | 398.9 | 402.8 | 402.0 |
| 137.5° | 406.2 | 410.9 | 414.8 | 418.7 | 417.5 |
| 140°   | 422.9 | 426.0 | 430.2 | 433.7 | 431.8 |
| 142.5° | 436.8 | 439.6 | 444.6 | 447.7 | 445.7 |
| 145°   | 451.5 | 451.1 | 457.7 | 460.4 | 458.5 |
| 147.5° | 464.3 | 463.1 | 469.7 | 471.6 | 470.1 |
| 150°   | 476.7 | 474.0 | 480.1 | 482.4 | 480.5 |
| 152.5° | 487.1 | 484.0 | 489.8 | 492.2 | 489.4 |
| 155°   | 497.2 | 493.7 | 498.4 | 500.7 | 497.6 |
| 157.5° | 505.3 | 502.2 | 505.7 | 508.4 | 505.3 |
| 160°   | 512.3 | 509.9 | 512.3 | 514.6 | 511.9 |
| 162.5° | 518.4 | 516.1 | 518.1 | 520.8 | 517.3 |
| 165°   | 523.9 | 521.6 | 522.7 | 525.5 | 522.7 |
| 167.5° | 528.1 | 525.8 | 527.0 | 529.7 | 526.2 |
| 170°   | 531.6 | 529.3 | 530.0 | 532.7 | 529.3 |
| 172.5° | 533.9 | 531.6 | 532.4 | 535.1 | 531.6 |
| 175°   | 535.8 | 533.1 | 533.9 | 536.6 | 532.7 |
| 177.5° | 536.6 | 533.9 | 534.3 | 537.0 | 533.5 |
| 180°   | 534.7 | 534.7 | 534.7 | 534.7 | 534.7 |

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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 | 10.83            | 11.84 | 11.63 | 12.65 | 13.63 | 6.80           | 7.80  | 7.59  | 8.61  | 9.60  |
|                 | 3H   | 12.52            | 13.42 | 13.33 | 14.24 | 15.26 | 7.99           | 8.89  | 8.80  | 9.71  | 10.73 |
|                 | 4H   | 13.13            | 13.98 | 13.96 | 14.81 | 15.84 | 8.45           | 9.29  | 9.27  | 10.12 | 11.15 |
|                 | 6H   | 13.56            | 14.34 | 14.39 | 15.18 | 16.22 | 8.77           | 9.55  | 9.60  | 10.38 | 11.42 |
|                 | 8H   | 13.69            | 14.43 | 14.53 | 15.29 | 16.33 | 8.86           | 9.60  | 9.70  | 10.46 | 11.50 |
|                 | 12H  | 13.76            | 14.46 | 14.60 | 15.31 | 16.38 | 8.91           | 9.62  | 9.76  | 10.46 | 11.53 |
| 4H              | 2H   | 10.87            | 11.72 | 11.70 | 12.55 | 13.57 | 7.41           | 8.26  | 8.24  | 9.08  | 10.11 |
|                 | 3H   | 12.71            | 13.42 | 13.55 | 14.28 | 15.32 | 8.77           | 9.47  | 9.61  | 10.33 | 11.38 |
|                 | 4H   | 13.41            | 14.05 | 14.26 | 14.90 | 15.98 | 9.32           | 9.96  | 10.17 | 10.81 | 11.89 |
|                 | 6H   | 13.93            | 14.48 | 14.79 | 15.36 | 16.44 | 9.74           | 10.29 | 10.61 | 11.17 | 12.25 |
|                 | 8H   | 14.10            | 14.62 | 14.97 | 15.49 | 16.58 | 9.87           | 10.38 | 10.74 | 11.26 | 12.35 |
|                 | 12H  | 14.20            | 14.67 | 15.09 | 15.56 | 16.66 | 9.94           | 10.40 | 10.83 | 11.30 | 12.39 |
| 8H              | 4H   | 13.39            | 13.90 | 14.26 | 14.78 | 15.87 | 9.61           | 10.12 | 10.48 | 11.00 | 12.09 |
|                 | 6H   | 13.95            | 14.38 | 14.85 | 15.30 | 16.39 | 10.12          | 10.55 | 11.02 | 11.47 | 12.56 |
|                 | 8H   | 14.17            | 14.54 | 15.07 | 15.46 | 16.56 | 10.31          | 10.69 | 11.22 | 11.60 | 12.71 |
|                 | 12H  | 14.31            | 14.64 | 15.22 | 15.55 | 16.70 | 10.43          | 10.76 | 11.34 | 11.67 | 12.83 |
| 12H             | 4H   | 13.35            | 13.81 | 14.23 | 14.71 | 15.80 | 9.62           | 10.08 | 10.51 | 10.98 | 12.07 |
|                 | 6H   | 13.93            | 14.31 | 14.84 | 15.22 | 16.32 | 10.17          | 10.55 | 11.08 | 11.46 | 12.57 |
|                 | 8H   | 14.15            | 14.49 | 15.06 | 15.39 | 16.55 | 10.39          | 10.72 | 11.29 | 11.62 | 12.78 |

END OF REPORT