

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: P921987

Luminaire Tested: DFN2DIP-PN2F0-040D020US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P921987  
REPORT IS A COMBINATION OF REPORTS P900986 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-040D020US940-RLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

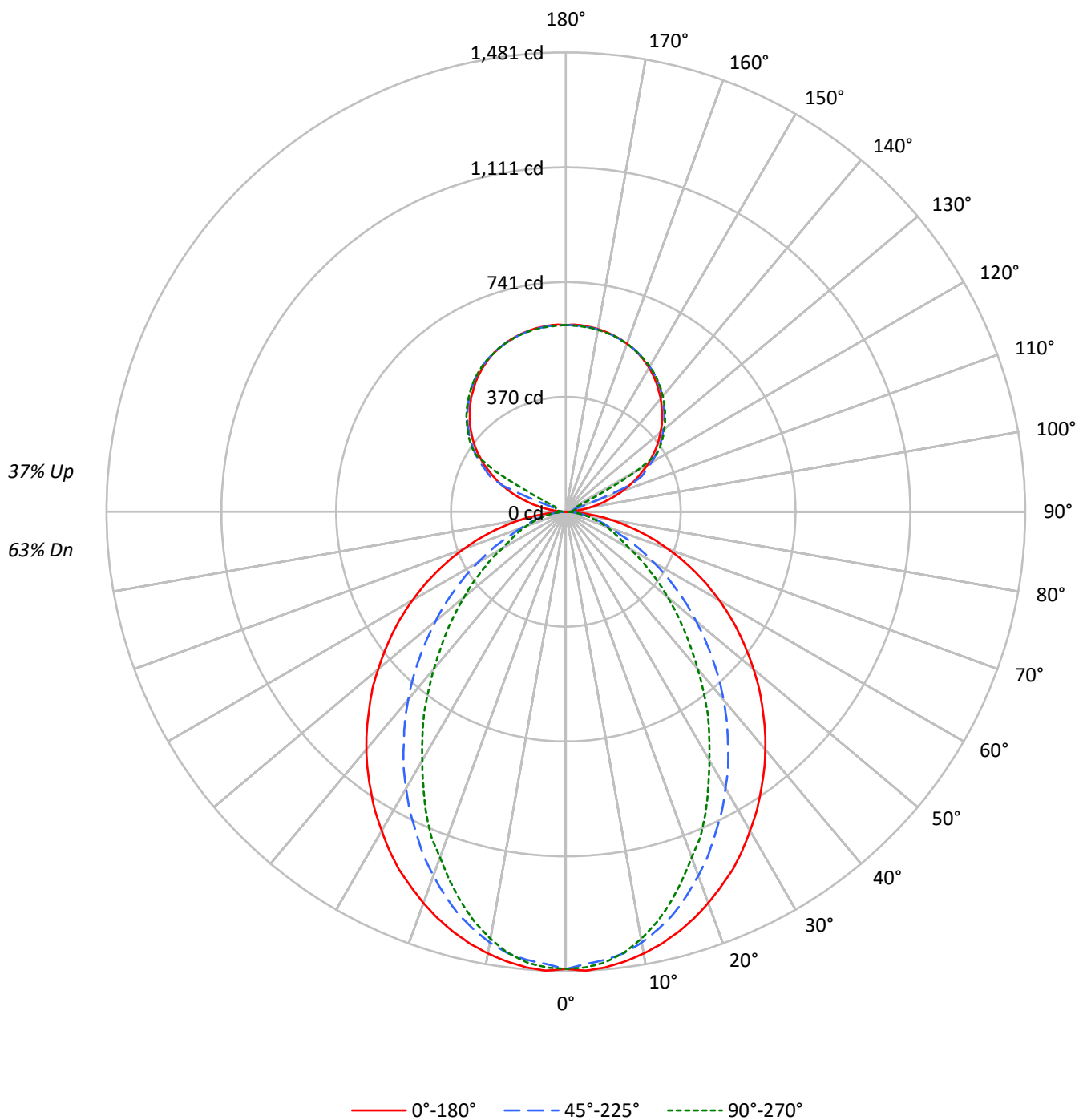
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4797.4 lumens  
Efficiency: N/A  
Efficacy: 86.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 55.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 91 | 91 | 91 | 79 | 79 | 79 | 68 | 68 | 68 |
| 1   | 101 | 97  | 93  | 90  | 95  | 91  | 88  | 85  | 80 | 78 | 76 | 71 | 69 | 67 | 61 | 60 | 59 |
| 2   | 93  | 86  | 80  | 75  | 87  | 81  | 75  | 71  | 71 | 67 | 64 | 63 | 60 | 57 | 55 | 52 | 51 |
| 3   | 85  | 76  | 69  | 63  | 80  | 72  | 65  | 60  | 63 | 58 | 54 | 56 | 52 | 49 | 49 | 46 | 44 |
| 4   | 78  | 68  | 60  | 54  | 73  | 64  | 57  | 52  | 57 | 51 | 47 | 50 | 46 | 43 | 44 | 41 | 38 |
| 5   | 72  | 61  | 53  | 47  | 67  | 57  | 50  | 45  | 51 | 45 | 41 | 46 | 41 | 37 | 40 | 37 | 34 |
| 6   | 67  | 55  | 47  | 41  | 62  | 52  | 45  | 39  | 46 | 41 | 36 | 41 | 37 | 33 | 37 | 33 | 30 |
| 7   | 62  | 50  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 38 | 33 | 30 | 34 | 30 | 27 |
| 8   | 58  | 45  | 38  | 32  | 54  | 43  | 36  | 31  | 39 | 33 | 29 | 35 | 30 | 27 | 31 | 27 | 24 |
| 9   | 54  | 42  | 34  | 29  | 51  | 40  | 33  | 28  | 36 | 30 | 26 | 32 | 27 | 24 | 29 | 25 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 37  | 30  | 25  | 33 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3193 | 3193 | 3193 |
| 5°  | 3193 | 3135 | 3158 |
| 10° | 3156 | 3067 | 3050 |
| 15° | 3107 | 2959 | 2887 |
| 20° | 3045 | 2813 | 2689 |
| 25° | 2981 | 2650 | 2497 |
| 30° | 2896 | 2484 | 2256 |
| 35° | 2814 | 2307 | 2043 |
| 40° | 2729 | 2124 | 1801 |
| 45° | 2631 | 1921 | 1582 |
| 50° | 2529 | 1718 | 1368 |
| 55° | 2423 | 1501 | 1163 |
| 60° | 2299 | 1275 | 953  |
| 65° | 2157 | 1047 | 852  |
| 70° | 1984 | 834  | 765  |
| 75° | 1765 | 722  | 686  |
| 80° | 1452 | 586  | 582  |
| 85° | 949  | 364  | 412  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2631 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 138.2  | 2.9       |
| 10°-20°   | 379.3  | 7.9       |
| 20°-30°   | 532.5  | 11.1      |
| 30°-40°   | 580.5  | 12.1      |
| 40°-50°   | 533.5  | 11.1      |
| 50°-60°   | 419.0  | 8.7       |
| 60°-70°   | 272.7  | 5.7       |
| 70°-80°   | 140.4  | 2.9       |
| 80°-90°   | 36.9   | 0.8       |
| 90°-100°  | 19.8   | 0.4       |
| 100°-110° | 74.0   | 1.5       |
| 110°-120° | 196.2  | 4.1       |
| 120°-130° | 325.4  | 6.8       |
| 130°-140° | 345.7  | 7.2       |
| 140°-150° | 321.3  | 6.7       |
| 150°-160° | 258.3  | 5.4       |
| 160°-170° | 166.4  | 3.5       |
| 170°-180° | 57.3   | 1.2       |
| 0°-30°    | 1049.9 | 21.9      |
| 0°-40°    | 1630.4 | 34.0      |
| 0°-60°    | 2582.9 | 53.8      |
| 0°-90°    | 3032.9 | 63.2      |
| 90°-120°  | 290.0  | 6.0       |
| 90°-150°  | 1282.5 | 26.7      |
| 90°-180°  | 1765.0 | 36.8      |
| 0°-180°   | 4797.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1474 | 1474  | 1474 | 1474  | 1474 |      |
| 5°   | 1474 | 1468  | 1450 | 1462  | 1458 | 140  |
| 15°  | 1402 | 1387  | 1342 | 1317  | 1304 | 395  |
| 25°  | 1273 | 1230  | 1142 | 1087  | 1067 | 585  |
| 35°  | 1097 | 1029  | 911  | 827   | 798  | 686  |
| 45°  | 896  | 807   | 667  | 572   | 540  | 692  |
| 55°  | 682  | 578   | 434  | 354   | 328  | 609  |
| 65°  | 460  | 352   | 232  | 187   | 183  | 456  |
| 75°  | 245  | 152   | 107  | 97    | 96   | 260  |
| 85°  | 57   | 29    | 25   | 25    | 25   | 66   |
| 90°  | 0    | 5     | 9    | 11    | 12   | 5    |
| 95°  | 28   | 14    | 17   | 19    | 19   | 33   |
| 105° | 132  | 145   | 27   | 31    | 33   | 141  |
| 115° | 250  | 258   | 269  | 67    | 36   | 247  |
| 125° | 354  | 360   | 368  | 371   | 372  | 316  |
| 135° | 438  | 445   | 449  | 453   | 452  | 338  |
| 145° | 508  | 508   | 515  | 518   | 516  | 318  |
| 155° | 560  | 556   | 561  | 564   | 560  | 258  |
| 165° | 590  | 587   | 588  | 592   | 588  | 167  |
| 175° | 603  | 600   | 601  | 604   | 600  | 57   |
| 180° | 602  | 602   | 602  | 602   | 602  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1474.2 | 1474.2 | 1474.2 | 1474.2 | 1474.2 |
| 2.5°   | 1480.9 | 1474.2 | 1459.5 | 1472.9 | 1470.2 |
| 5°     | 1474.2 | 1467.5 | 1450.1 | 1462.1 | 1458.2 |
| 7.5°   | 1462.1 | 1454.2 | 1435.6 | 1440.7 | 1434.1 |
| 10°    | 1446.2 | 1436.8 | 1410.2 | 1406.0 | 1398.2 |
| 12.5°  | 1426.2 | 1414.2 | 1378.0 | 1370.1 | 1355.4 |
| 15°    | 1402.1 | 1387.4 | 1342.1 | 1316.8 | 1303.5 |
| 17.5°  | 1374.1 | 1352.7 | 1296.6 | 1267.4 | 1246.0 |
| 20°    | 1342.1 | 1315.4 | 1248.7 | 1215.4 | 1186.0 |
| 22.5°  | 1307.4 | 1276.8 | 1199.3 | 1154.0 | 1134.1 |
| 25°    | 1272.7 | 1230.0 | 1141.9 | 1087.4 | 1067.2 |
| 27.5°  | 1231.5 | 1186.0 | 1088.6 | 1025.9 | 995.1  |
| 30°    | 1187.4 | 1136.6 | 1029.8 | 961.9  | 925.9  |
| 32.5°  | 1144.7 | 1083.2 | 973.9  | 893.9  | 860.4  |
| 35°    | 1096.7 | 1028.6 | 911.2  | 827.2  | 797.7  |
| 37.5°  | 1050.0 | 976.5  | 852.5  | 760.4  | 727.1  |
| 40°    | 1000.6 | 920.6  | 791.1  | 696.4  | 661.7  |
| 42.5°  | 949.8  | 864.5  | 729.8  | 631.0  | 597.7  |
| 45°    | 896.5  | 807.1  | 667.1  | 572.3  | 540.3  |
| 47.5°  | 845.9  | 751.2  | 607.1  | 512.3  | 483.0  |
| 50°    | 789.8  | 695.1  | 548.3  | 456.2  | 428.3  |
| 52.5°  | 735.0  | 635.0  | 492.3  | 404.2  | 378.9  |
| 55°    | 681.7  | 577.6  | 433.5  | 353.6  | 328.2  |
| 57.5°  | 627.1  | 520.3  | 381.6  | 306.8  | 285.5  |
| 60°    | 571.0  | 464.2  | 326.8  | 258.9  | 237.6  |
| 62.5°  | 516.4  | 409.7  | 280.1  | 216.2  | 205.5  |
| 65°    | 460.3  | 352.1  | 232.1  | 186.8  | 182.7  |
| 67.5°  | 407.0  | 298.8  | 186.8  | 164.1  | 160.1  |
| 70°    | 350.9  | 246.8  | 154.7  | 141.4  | 136.0  |
| 72.5°  | 297.6  | 198.8  | 129.4  | 118.8  | 116.1  |
| 75°    | 245.4  | 152.0  | 106.7  | 97.4   | 96.1   |
| 77.5°  | 193.5  | 108.0  | 84.1   | 78.7   | 76.0   |
| 80°    | 145.3  | 77.4   | 63.9   | 58.8   | 58.8   |
| 82.5°  | 101.4  | 52.1   | 44.1   | 41.3   | 41.3   |
| 85°    | 57.3   | 29.3   | 25.3   | 25.3   | 25.3   |
| 87.5°  | 21.4   | 10.6   | 10.6   | 9.4    | 9.4    |
| 90°    | 0.4    | 5.3    | 8.6    | 10.9   | 11.8   |
| 92.5°  | 10.9   | 9.2    | 10.4   | 11.3   | 11.8   |
| 95°    | 28.3   | 13.9   | 16.9   | 19.2   | 18.7   |
| 97.5°  | 50.9   | 15.2   | 22.2   | 23.5   | 24.0   |
| 100°   | 77.1   | 17.4   | 24.8   | 28.3   | 29.2   |
| 102.5° | 105.8  | 105.0  | 25.7   | 30.5   | 31.8   |
| 105°   | 132.4  | 145.4  | 26.6   | 31.3   | 33.1   |
| 107.5° | 163.4  | 174.2  | 27.5   | 32.2   | 34.0   |
| 110°   | 193.0  | 202.1  | 76.2   | 32.7   | 34.4   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 220.8 | 228.6 | 221.2 | 33.5  | 34.9  |
| 115°   | 250.4 | 257.8 | 268.8 | 67.1  | 35.8  |
| 117.5° | 276.1 | 284.8 | 292.2 | 230.0 | 115.8 |
| 120°   | 304.9 | 311.4 | 319.2 | 324.5 | 265.6 |
| 122.5° | 329.2 | 336.2 | 344.9 | 347.5 | 348.0 |
| 125°   | 354.1 | 359.7 | 368.0 | 371.0 | 372.4 |
| 127.5° | 376.7 | 382.8 | 389.4 | 393.7 | 394.1 |
| 130°   | 398.1 | 405.0 | 409.8 | 414.6 | 414.2 |
| 132.5° | 419.8 | 425.5 | 430.3 | 434.2 | 433.8 |
| 135°   | 438.2 | 445.1 | 449.0 | 453.4 | 452.5 |
| 137.5° | 457.3 | 462.5 | 466.9 | 471.3 | 469.9 |
| 140°   | 476.0 | 479.6 | 484.3 | 488.2 | 486.1 |
| 142.5° | 491.7 | 494.8 | 500.4 | 503.9 | 501.7 |
| 145°   | 508.3 | 507.8 | 515.2 | 518.3 | 516.1 |
| 147.5° | 522.6 | 521.3 | 528.7 | 530.8 | 529.1 |
| 150°   | 536.5 | 533.5 | 540.5 | 543.1 | 540.9 |
| 152.5° | 548.3 | 544.8 | 551.3 | 554.0 | 550.9 |
| 155°   | 559.6 | 555.7 | 561.0 | 563.6 | 560.1 |
| 157.5° | 568.8 | 565.3 | 569.3 | 572.3 | 568.8 |
| 160°   | 576.7 | 574.0 | 576.7 | 579.3 | 576.2 |
| 162.5° | 583.5 | 580.9 | 583.2 | 586.2 | 582.3 |
| 165°   | 589.7 | 587.1 | 588.4 | 591.5 | 588.4 |
| 167.5° | 594.5 | 591.8 | 593.2 | 596.3 | 592.3 |
| 170°   | 598.4 | 595.8 | 596.6 | 599.7 | 595.8 |
| 172.5° | 601.0 | 598.4 | 599.3 | 602.4 | 598.4 |
| 175°   | 603.2 | 600.1 | 601.0 | 604.0 | 599.7 |
| 177.5° | 604.0 | 601.0 | 601.5 | 604.5 | 600.6 |
| 180°   | 601.9 | 601.9 | 601.9 | 601.9 | 601.9 |

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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 | 12.22            | 13.17 | 13.06 | 14.03 | 15.10 | 8.18           | 9.13  | 9.03  | 9.99  | 11.06 |
|                 | 3H   | 13.88            | 14.73 | 14.74 | 15.60 | 16.70 | 9.36           | 10.22 | 10.22 | 11.08 | 12.18 |
|                 | 4H   | 14.48            | 15.29 | 15.35 | 16.16 | 17.27 | 9.81           | 10.61 | 10.68 | 11.49 | 12.60 |
|                 | 6H   | 14.89            | 15.63 | 15.78 | 16.52 | 17.64 | 10.12          | 10.86 | 11.00 | 11.74 | 12.87 |
|                 | 8H   | 15.02            | 15.72 | 15.91 | 16.62 | 17.74 | 10.21          | 10.91 | 11.10 | 11.81 | 12.93 |
|                 | 12H  | 15.07            | 15.74 | 15.97 | 16.64 | 17.78 | 10.25          | 10.92 | 11.14 | 11.81 | 12.96 |
| 4H              | 2H   | 12.24            | 13.05 | 13.12 | 13.92 | 15.03 | 8.78           | 9.58  | 9.66  | 10.46 | 11.57 |
|                 | 3H   | 14.06            | 14.73 | 14.95 | 15.64 | 16.76 | 10.12          | 10.79 | 11.01 | 11.70 | 12.82 |
|                 | 4H   | 14.74            | 15.35 | 15.64 | 16.25 | 17.40 | 10.66          | 11.27 | 11.56 | 12.17 | 13.32 |
|                 | 6H   | 15.24            | 15.77 | 16.16 | 16.69 | 17.85 | 11.07          | 11.59 | 11.98 | 12.52 | 13.67 |
|                 | 8H   | 15.41            | 15.90 | 16.33 | 16.82 | 17.99 | 11.19          | 11.68 | 12.11 | 12.60 | 13.77 |
|                 | 12H  | 15.50            | 15.94 | 16.43 | 16.88 | 18.05 | 11.25          | 11.69 | 12.19 | 12.63 | 13.80 |
| 8H              | 4H   | 14.72            | 15.20 | 15.63 | 16.12 | 17.29 | 10.94          | 11.43 | 11.86 | 12.35 | 13.52 |
|                 | 6H   | 15.26            | 15.67 | 16.20 | 16.63 | 17.80 | 11.44          | 11.84 | 12.38 | 12.81 | 13.97 |
|                 | 8H   | 15.47            | 15.82 | 16.42 | 16.78 | 17.96 | 11.62          | 11.97 | 12.57 | 12.93 | 14.11 |
|                 | 12H  | 15.60            | 15.91 | 16.55 | 16.86 | 18.09 | 11.73          | 12.04 | 12.68 | 12.99 | 14.22 |
| 12H             | 4H   | 14.67            | 15.11 | 15.61 | 16.05 | 17.22 | 10.95          | 11.39 | 11.88 | 12.33 | 13.50 |
|                 | 6H   | 15.24            | 15.59 | 16.19 | 16.55 | 17.73 | 11.48          | 11.84 | 12.44 | 12.80 | 13.98 |
|                 | 8H   | 15.45            | 15.76 | 16.40 | 16.71 | 17.94 | 11.68          | 12.00 | 12.64 | 12.95 | 14.18 |

END OF REPORT