

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: P913479

Luminaire Tested: DFN2DIP-HX3F0-050D030US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913479  
REPORT IS A COMBINATION OF REPORTS P900725 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-050D030US927-FLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

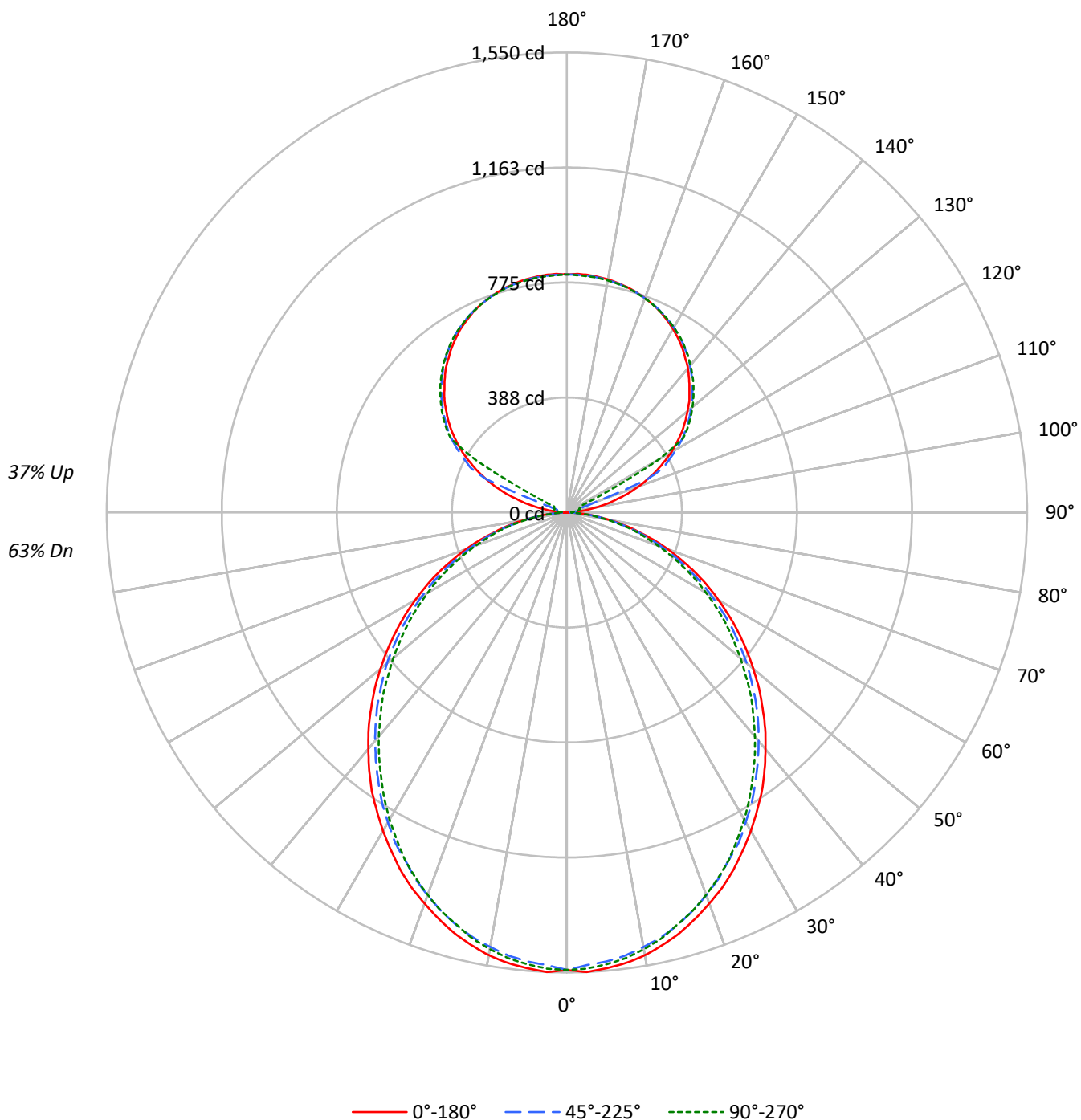
Lumens per Lamp: N/A  
Luminaire Lumens: 6274.1 lumens  
Efficiency: N/A  
Efficacy: 92.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 67.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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 | 90 | 90 | 90 | 78 | 78 | 78 | 68 | 68 | 68 |
| 1   | 101 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 69 | 67 | 65 | 60 | 58 | 57 |
| 2   | 92  | 84  | 78  | 72  | 86  | 79  | 73  | 69  | 69 | 65 | 62 | 61 | 58 | 55 | 53 | 50 | 48 |
| 3   | 84  | 74  | 66  | 60  | 78  | 70  | 63  | 57  | 61 | 56 | 52 | 54 | 50 | 46 | 47 | 44 | 41 |
| 4   | 77  | 65  | 57  | 51  | 71  | 62  | 54  | 49  | 55 | 49 | 44 | 48 | 43 | 40 | 42 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 66  | 55  | 48  | 42  | 49 | 43 | 38 | 43 | 38 | 34 | 38 | 34 | 31 |
| 6   | 65  | 53  | 44  | 38  | 61  | 50  | 42  | 37  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 47  | 39  | 34  | 56  | 45  | 38  | 32  | 40 | 34 | 30 | 35 | 31 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 26 | 33 | 28 | 24 | 29 | 25 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 37  | 30  | 26  | 34 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |
| 10  | 49  | 36  | 29  | 24  | 46  | 34  | 28  | 23  | 31 | 25 | 21 | 28 | 23 | 20 | 25 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1785 | 1785 | 1785 |
| 5°  | 1787 | 1759 | 1771 |
| 10° | 1772 | 1734 | 1746 |
| 15° | 1745 | 1704 | 1708 |
| 20° | 1709 | 1664 | 1668 |
| 25° | 1673 | 1615 | 1623 |
| 30° | 1629 | 1569 | 1566 |
| 35° | 1586 | 1516 | 1505 |
| 40° | 1534 | 1462 | 1448 |
| 45° | 1482 | 1408 | 1388 |
| 50° | 1425 | 1351 | 1320 |
| 55° | 1365 | 1285 | 1257 |
| 60° | 1298 | 1207 | 1184 |
| 65° | 1224 | 1127 | 1099 |
| 70° | 1130 | 1028 | 1007 |
| 75° | 1000 | 910  | 920  |
| 80° | 843  | 758  | 758  |
| 85° | 598  | 502  | 492  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1482 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 145.1  | 2.3       |
| 10°-20°   | 408.1  | 6.5       |
| 20°-30°   | 599.8  | 9.6       |
| 30°-40°   | 696.6  | 11.1      |
| 40°-50°   | 695.8  | 11.1      |
| 50°-60°   | 606.7  | 9.7       |
| 60°-70°   | 448.5  | 7.1       |
| 70°-80°   | 253.7  | 4.0       |
| 80°-90°   | 68.4   | 1.1       |
| 90°-100°  | 26.5   | 0.4       |
| 100°-110° | 98.6   | 1.6       |
| 110°-120° | 261.5  | 4.2       |
| 120°-130° | 433.7  | 6.9       |
| 130°-140° | 460.7  | 7.3       |
| 140°-150° | 428.1  | 6.8       |
| 150°-160° | 344.2  | 5.5       |
| 160°-170° | 221.8  | 3.5       |
| 170°-180° | 76.3   | 1.2       |
| 0°-30°    | 1153.0 | 18.4      |
| 0°-40°    | 1849.6 | 29.5      |
| 0°-60°    | 3152.1 | 50.2      |
| 0°-90°    | 3922.7 | 62.5      |
| 90°-120°  | 386.5  | 6.2       |
| 90°-150°  | 1709.0 | 27.2      |
| 90°-180°  | 2351.0 | 37.5      |
| 0°-180°   | 6274.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1541 | 1541  | 1541 | 1541  | 1541 |      |
| 5°   | 1541 | 1535  | 1519 | 1531  | 1528 | 146  |
| 15°  | 1467 | 1458  | 1439 | 1445  | 1438 | 413  |
| 25°  | 1328 | 1316  | 1291 | 1294  | 1291 | 611  |
| 35°  | 1146 | 1131  | 1107 | 1098  | 1091 | 715  |
| 45°  | 932  | 922   | 900  | 883   | 877  | 719  |
| 55°  | 706  | 697   | 679  | 661   | 654  | 631  |
| 65°  | 476  | 467   | 452  | 439   | 431  | 470  |
| 75°  | 249  | 246   | 238  | 230   | 233  | 266  |
| 85°  | 61   | 59    | 58   | 53    | 52   | 68   |
| 90°  | 1    | 7     | 12   | 15    | 16   | 6    |
| 95°  | 38   | 18    | 23   | 26    | 25   | 45   |
| 105° | 176  | 194   | 35   | 42    | 44   | 188  |
| 115° | 334  | 344   | 358  | 89    | 48   | 329  |
| 125° | 472  | 479   | 490  | 494   | 496  | 421  |
| 135° | 584  | 593   | 598  | 604   | 603  | 451  |
| 145° | 677  | 677   | 687  | 691   | 688  | 424  |
| 155° | 746  | 741   | 748  | 751   | 746  | 344  |
| 165° | 786  | 782   | 784  | 788   | 784  | 222  |
| 175° | 804  | 800   | 801  | 805   | 799  | 76   |
| 180° | 802  | 802   | 802  | 802   | 802  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1541.2 | 1541.2 | 1541.2 | 1541.2 | 1541.2 |
| 2.5°   | 1550.1 | 1542.8 | 1526.5 | 1541.2 | 1538.4 |
| 5°     | 1541.2 | 1535.4 | 1519.0 | 1530.8 | 1528.0 |
| 7.5°   | 1530.8 | 1522.0 | 1505.7 | 1517.7 | 1514.7 |
| 10°    | 1514.7 | 1504.3 | 1486.5 | 1498.3 | 1493.9 |
| 12.5°  | 1492.3 | 1483.5 | 1465.8 | 1473.1 | 1470.1 |
| 15°    | 1467.1 | 1458.3 | 1439.0 | 1445.0 | 1437.6 |
| 17.5°  | 1436.0 | 1427.2 | 1407.9 | 1415.2 | 1407.9 |
| 20°    | 1401.9 | 1393.1 | 1372.4 | 1376.7 | 1370.9 |
| 22.5°  | 1367.9 | 1354.6 | 1335.2 | 1335.2 | 1332.2 |
| 25°    | 1327.9 | 1316.1 | 1290.9 | 1293.7 | 1290.9 |
| 27.5°  | 1283.3 | 1273.0 | 1253.8 | 1249.3 | 1242.0 |
| 30°    | 1239.0 | 1227.1 | 1204.9 | 1200.5 | 1194.5 |
| 32.5°  | 1191.5 | 1182.7 | 1159.0 | 1150.0 | 1144.1 |
| 35°    | 1145.6 | 1130.8 | 1107.1 | 1098.1 | 1090.8 |
| 37.5°  | 1093.7 | 1080.4 | 1056.6 | 1046.2 | 1038.9 |
| 40°    | 1040.5 | 1028.5 | 1004.7 | 991.5  | 985.6  |
| 42.5°  | 988.6  | 976.6  | 953.0  | 938.0  | 929.2  |
| 45°    | 932.2  | 921.9  | 899.5  | 883.4  | 877.3  |
| 47.5°  | 877.3  | 867.0  | 843.3  | 826.9  | 818.1  |
| 50°    | 819.5  | 812.1  | 791.4  | 770.6  | 763.2  |
| 52.5°  | 763.2  | 752.8  | 733.6  | 717.3  | 706.9  |
| 55°    | 705.5  | 696.6  | 678.7  | 661.0  | 653.6  |
| 57.5°  | 647.6  | 640.2  | 620.9  | 603.2  | 597.1  |
| 60°    | 589.8  | 584.0  | 563.2  | 546.8  | 542.5  |
| 62.5°  | 533.5  | 523.2  | 508.3  | 493.5  | 487.6  |
| 65°    | 475.8  | 466.8  | 452.0  | 438.7  | 431.3  |
| 67.5°  | 416.5  | 409.0  | 395.8  | 385.4  | 379.4  |
| 70°    | 361.6  | 355.7  | 342.3  | 331.9  | 326.1  |
| 72.5°  | 305.4  | 299.4  | 292.0  | 281.6  | 277.2  |
| 75°    | 248.9  | 246.1  | 238.5  | 229.7  | 232.7  |
| 77.5°  | 198.6  | 192.6  | 189.6  | 185.2  | 180.9  |
| 80°    | 148.3  | 146.7  | 143.7  | 139.3  | 136.3  |
| 82.5°  | 100.8  | 100.8  | 99.3   | 93.4   | 93.4   |
| 85°    | 60.7   | 59.3   | 57.8   | 53.3   | 51.9   |
| 87.5°  | 26.7   | 23.8   | 20.8   | 16.3   | 14.8   |
| 90°    | 0.6    | 7.0    | 11.6   | 14.6   | 15.6   |
| 92.5°  | 14.6   | 12.2   | 13.9   | 15.1   | 15.6   |
| 95°    | 37.7   | 18.5   | 22.6   | 25.6   | 25.0   |
| 97.5°  | 67.9   | 20.4   | 29.5   | 31.4   | 31.9   |
| 100°   | 102.7  | 23.2   | 33.1   | 37.7   | 38.9   |
| 102.5° | 141.0  | 139.9  | 34.2   | 40.6   | 42.4   |
| 105°   | 176.4  | 193.8  | 35.4   | 41.7   | 44.1   |
| 107.5° | 217.6  | 232.1  | 36.6   | 42.9   | 45.3   |
| 110°   | 257.1  | 269.3  | 101.6  | 43.6   | 45.9   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 294.3 | 304.7 | 294.8 | 44.7  | 46.4  |
| 115°   | 333.7 | 343.6 | 358.1 | 89.4  | 47.6  |
| 117.5° | 368.0 | 379.5 | 389.4 | 306.4 | 154.4 |
| 120°   | 406.2 | 414.9 | 425.4 | 432.4 | 354.0 |
| 122.5° | 438.7 | 448.1 | 459.7 | 463.1 | 463.7 |
| 125°   | 471.8 | 479.3 | 490.4 | 494.5 | 496.2 |
| 127.5° | 502.0 | 510.1 | 518.9 | 524.7 | 525.2 |
| 130°   | 530.4 | 539.8 | 546.1 | 552.5 | 552.0 |
| 132.5° | 559.4 | 567.0 | 573.4 | 578.6 | 578.1 |
| 135°   | 583.8 | 593.2 | 598.3 | 604.2 | 603.0 |
| 137.5° | 609.3 | 616.3 | 622.2 | 628.0 | 626.2 |
| 140°   | 634.3 | 639.0 | 645.3 | 650.5 | 647.7 |
| 142.5° | 655.3 | 659.3 | 666.9 | 671.5 | 668.6 |
| 145°   | 677.3 | 676.7 | 686.6 | 690.6 | 687.7 |
| 147.5° | 696.4 | 694.7 | 704.6 | 707.4 | 705.1 |
| 150°   | 715.0 | 711.0 | 720.3 | 723.7 | 720.8 |
| 152.5° | 730.6 | 726.0 | 734.7 | 738.2 | 734.2 |
| 155°   | 745.8 | 740.6 | 747.5 | 751.0 | 746.4 |
| 157.5° | 758.0 | 753.4 | 758.6 | 762.6 | 758.0 |
| 160°   | 768.4 | 764.9 | 768.4 | 771.9 | 767.8 |
| 162.5° | 777.7 | 774.2 | 777.1 | 781.2 | 775.9 |
| 165°   | 785.8 | 782.4 | 784.1 | 788.1 | 784.1 |
| 167.5° | 792.2 | 788.7 | 790.4 | 794.6 | 789.3 |
| 170°   | 797.4 | 793.9 | 795.1 | 799.2 | 793.9 |
| 172.5° | 800.9 | 797.4 | 798.6 | 802.6 | 797.4 |
| 175°   | 803.7 | 799.7 | 800.9 | 804.9 | 799.2 |
| 177.5° | 804.9 | 800.9 | 801.5 | 805.6 | 800.3 |
| 180°   | 802.1 | 802.1 | 802.1 | 802.1 | 802.1 |

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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 | 10.32            | 11.31 | 11.16 | 12.17 | 13.25 | 9.89           | 10.88 | 10.74 | 11.75 | 12.83 |
|                 | 3H   | 11.99            | 12.87 | 12.84 | 13.74 | 14.85 | 11.52          | 12.40 | 12.37 | 13.28 | 14.38 |
|                 | 4H   | 12.57            | 13.41 | 13.44 | 14.29 | 15.41 | 12.10          | 12.94 | 12.98 | 13.82 | 14.94 |
|                 | 6H   | 12.97            | 13.75 | 13.86 | 14.63 | 15.76 | 12.50          | 13.28 | 13.39 | 14.16 | 15.29 |
|                 | 8H   | 13.08            | 13.81 | 13.97 | 14.72 | 15.85 | 12.61          | 13.34 | 13.50 | 14.25 | 15.38 |
|                 | 12H  | 13.13            | 13.83 | 14.03 | 14.73 | 15.88 | 12.65          | 13.35 | 13.55 | 14.25 | 15.41 |
| 4H              | 2H   | 10.80            | 11.63 | 11.67 | 12.51 | 13.63 | 10.45          | 11.29 | 11.33 | 12.17 | 13.29 |
|                 | 3H   | 12.67            | 13.36 | 13.55 | 14.28 | 15.41 | 12.28          | 12.97 | 13.16 | 13.89 | 15.02 |
|                 | 4H   | 13.38            | 14.02 | 14.28 | 14.92 | 16.08 | 12.98          | 13.61 | 13.88 | 14.52 | 15.68 |
|                 | 6H   | 13.89            | 14.44 | 14.81 | 15.38 | 16.54 | 13.49          | 14.04 | 14.40 | 14.97 | 16.13 |
|                 | 8H   | 14.04            | 14.56 | 14.96 | 15.48 | 16.66 | 13.64          | 14.15 | 14.55 | 15.08 | 16.25 |
|                 | 12H  | 14.12            | 14.58 | 15.05 | 15.53 | 16.71 | 13.70          | 14.17 | 14.64 | 15.11 | 16.29 |
| 8H              | 4H   | 13.58            | 14.10 | 14.50 | 15.02 | 16.20 | 13.22          | 13.74 | 14.14 | 14.67 | 15.84 |
|                 | 6H   | 14.21            | 14.64 | 15.15 | 15.60 | 16.78 | 13.85          | 14.28 | 14.79 | 15.24 | 16.42 |
|                 | 8H   | 14.43            | 14.80 | 15.38 | 15.76 | 16.95 | 14.06          | 14.44 | 15.01 | 15.40 | 16.59 |
|                 | 12H  | 14.56            | 14.89 | 15.51 | 15.84 | 17.08 | 14.18          | 14.51 | 15.13 | 15.46 | 16.70 |
| 12H             | 4H   | 13.57            | 14.04 | 14.51 | 14.98 | 16.16 | 13.22          | 13.69 | 14.16 | 14.63 | 15.81 |
|                 | 6H   | 14.24            | 14.62 | 15.19 | 15.58 | 16.77 | 13.89          | 14.27 | 14.84 | 15.23 | 16.42 |
|                 | 8H   | 14.48            | 14.81 | 15.44 | 15.76 | 17.01 | 14.13          | 14.46 | 15.08 | 15.41 | 16.65 |

END OF REPORT