

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: P909810

Luminaire Tested: DFN2DIP-TR2F0-060D050US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909810  
REPORT IS A COMBINATION OF REPORTS P900260 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-060D050US840-RLLFLL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

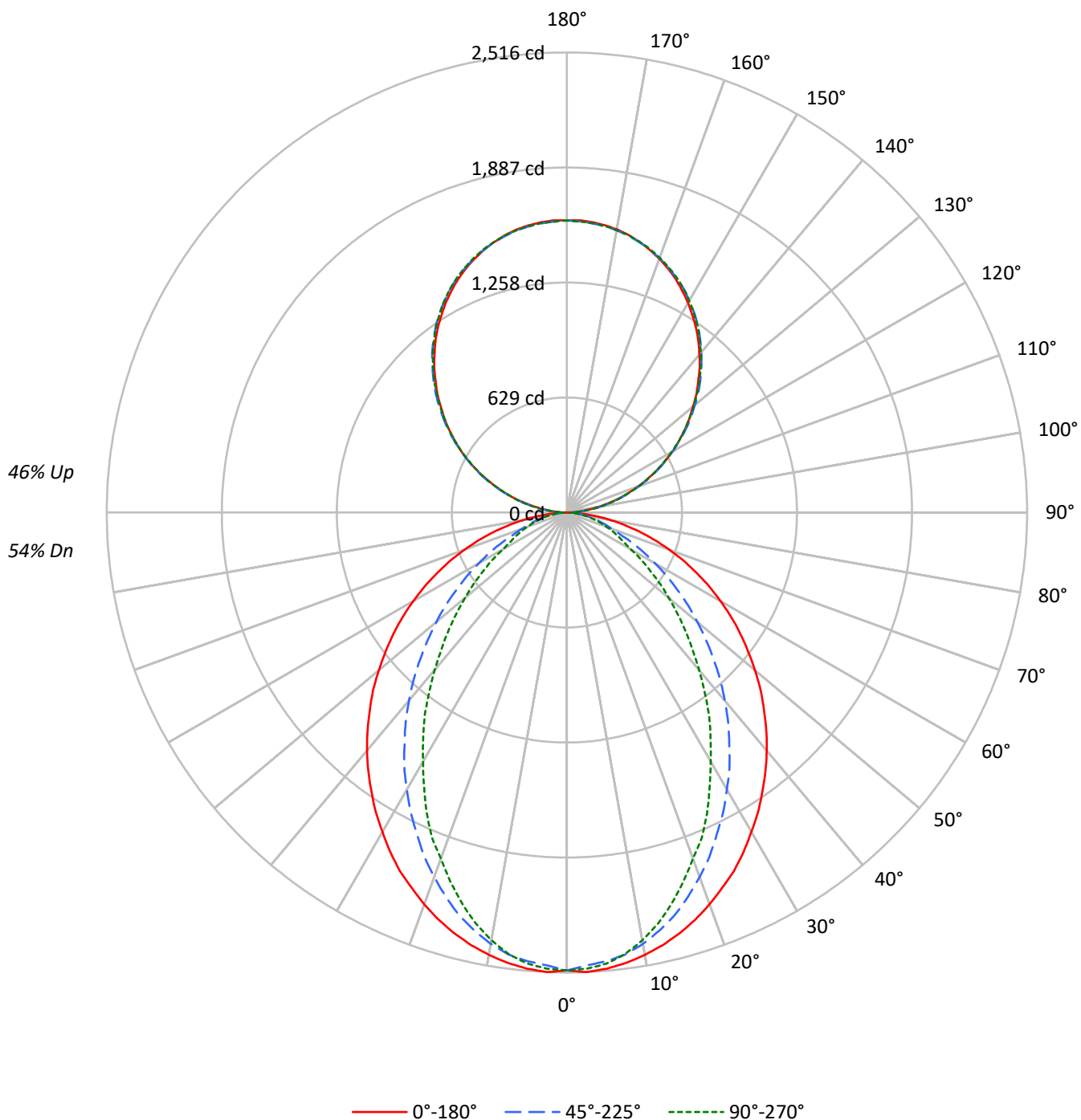
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9619.0 lumens  
Efficiency: N/A  
Efficacy: 98.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 97.9  
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: P909810

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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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 59 | 59 | 59 |
| 1   | 99  | 95  | 91  | 88  | 92  | 88  | 85  | 82  | 76 | 73 | 71 | 64 | 62 | 61 | 53 | 52 | 51 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 68  | 67 | 63 | 60 | 57 | 54 | 52 | 48 | 46 | 44 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 59 | 55 | 51 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 66  | 58  | 52  | 71  | 61  | 55  | 49  | 53 | 48 | 44 | 46 | 42 | 38 | 38 | 36 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 42 | 38 | 41 | 37 | 34 | 35 | 32 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 50  | 43  | 37  | 43 | 38 | 34 | 37 | 33 | 30 | 32 | 29 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 30 | 27 | 29 | 26 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 30  | 36 | 31 | 27 | 31 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 27  | 33 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 31 | 25 | 22 | 27 | 23 | 20 | 23 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5586 | 5586 | 5586 |
| 5°  | 5586 | 5484 | 5522 |
| 10° | 5523 | 5365 | 5333 |
| 15° | 5438 | 5175 | 5047 |
| 20° | 5329 | 4919 | 4698 |
| 25° | 5218 | 4635 | 4362 |
| 30° | 5071 | 4344 | 3939 |
| 35° | 4927 | 4033 | 3568 |
| 40° | 4779 | 3712 | 3144 |
| 45° | 4609 | 3358 | 2760 |
| 50° | 4432 | 3001 | 2386 |
| 55° | 4246 | 2622 | 2026 |
| 60° | 4031 | 2228 | 1659 |
| 65° | 3783 | 1828 | 1483 |
| 70° | 3482 | 1456 | 1329 |
| 75° | 3103 | 1259 | 1190 |
| 80° | 2557 | 1022 | 1003 |
| 85° | 1679 | 633  | 706  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4609 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 234.7  | 2.4       |
| 10°-20°   | 644.3  | 6.7       |
| 20°-30°   | 904.6  | 9.4       |
| 30°-40°   | 986.1  | 10.3      |
| 40°-50°   | 906.3  | 9.4       |
| 50°-60°   | 711.7  | 7.4       |
| 60°-70°   | 463.3  | 4.8       |
| 70°-80°   | 238.5  | 2.5       |
| 80°-90°   | 65.4   | 0.7       |
| 90°-100°  | 98.8   | 1.0       |
| 100°-110° | 314.0  | 3.3       |
| 110°-120° | 537.3  | 5.6       |
| 120°-130° | 706.6  | 7.3       |
| 130°-140° | 793.2  | 8.2       |
| 140°-150° | 777.8  | 8.1       |
| 150°-160° | 652.5  | 6.8       |
| 160°-170° | 432.7  | 4.5       |
| 170°-180° | 151.2  | 1.6       |
| 0°-30°    | 1783.6 | 18.5      |
| 0°-40°    | 2769.6 | 28.8      |
| 0°-60°    | 4387.7 | 45.6      |
| 0°-90°    | 5154.9 | 53.6      |
| 90°-120°  | 950.1  | 9.9       |
| 90°-150°  | 3227.7 | 33.6      |
| 90°-180°  | 4464.0 | 46.4      |
| 0°-180°   | 9619.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2504 | 2504  | 2504 | 2504  | 2504 |      |
| 5°   | 2504 | 2493  | 2463 | 2484  | 2477 | 237  |
| 15°  | 2382 | 2357  | 2280 | 2237  | 2214 | 671  |
| 25°  | 2162 | 2090  | 1940 | 1847  | 1813 | 994  |
| 35°  | 1863 | 1747  | 1548 | 1405  | 1355 | 1166 |
| 45°  | 1523 | 1371  | 1133 | 972   | 918  | 1176 |
| 55°  | 1158 | 981   | 736  | 601   | 558  | 1035 |
| 65°  | 782  | 598   | 394  | 317   | 310  | 775  |
| 75°  | 417  | 258   | 181  | 165   | 163  | 441  |
| 85°  | 97   | 50    | 43   | 43    | 43   | 112  |
| 90°  | 1    | 17    | 47   | 44    | 46   | 9    |
| 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 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2504.3 | 2504.3 | 2504.3 | 2504.3 | 2504.3 |
| 2.5°   | 2515.6 | 2504.3 | 2479.2 | 2502.0 | 2497.5 |
| 5°     | 2504.3 | 2493.0 | 2463.4 | 2483.9 | 2477.1 |
| 7.5°   | 2483.9 | 2470.3 | 2438.6 | 2447.5 | 2436.2 |
| 10°    | 2456.6 | 2440.7 | 2395.6 | 2388.6 | 2375.1 |
| 12.5°  | 2422.8 | 2402.3 | 2341.0 | 2327.5 | 2302.5 |
| 15°    | 2381.9 | 2356.8 | 2279.9 | 2236.9 | 2214.2 |
| 17.5°  | 2334.3 | 2297.9 | 2202.7 | 2152.9 | 2116.7 |
| 20°    | 2279.9 | 2234.4 | 2121.2 | 2064.7 | 2014.7 |
| 22.5°  | 2221.0 | 2168.8 | 2037.3 | 1960.4 | 1926.4 |
| 25°    | 2162.1 | 2089.5 | 1940.0 | 1847.1 | 1813.0 |
| 27.5°  | 2091.9 | 2014.7 | 1849.3 | 1742.7 | 1690.6 |
| 30°    | 2017.1 | 1930.8 | 1749.5 | 1634.1 | 1572.8 |
| 32.5°  | 1944.5 | 1840.2 | 1654.6 | 1518.4 | 1461.7 |
| 35°    | 1863.0 | 1747.4 | 1548.0 | 1405.1 | 1355.1 |
| 37.5°  | 1783.6 | 1658.8 | 1448.2 | 1291.7 | 1235.2 |
| 40°    | 1699.7 | 1563.9 | 1343.8 | 1183.0 | 1124.1 |
| 42.5°  | 1613.7 | 1468.6 | 1239.7 | 1071.9 | 1015.4 |
| 45°    | 1523.0 | 1371.0 | 1133.3 | 972.1  | 917.8  |
| 47.5°  | 1436.9 | 1276.1 | 1031.3 | 870.2  | 820.4  |
| 50°    | 1341.7 | 1180.8 | 931.5  | 775.0  | 727.6  |
| 52.5°  | 1248.6 | 1078.6 | 836.3  | 686.7  | 643.7  |
| 55°    | 1158.0 | 981.3  | 736.5  | 600.7  | 557.5  |
| 57.5°  | 1065.2 | 883.8  | 648.2  | 521.3  | 484.9  |
| 60°    | 970.0  | 788.7  | 555.2  | 439.8  | 403.4  |
| 62.5°  | 877.2  | 695.9  | 475.8  | 367.2  | 349.1  |
| 65°    | 781.9  | 598.2  | 394.4  | 317.4  | 310.4  |
| 67.5°  | 691.3  | 507.6  | 317.4  | 278.7  | 272.0  |
| 70°    | 596.0  | 419.3  | 262.8  | 240.2  | 231.1  |
| 72.5°  | 505.4  | 337.6  | 219.7  | 201.8  | 197.1  |
| 75°    | 417.0  | 258.2  | 181.3  | 165.4  | 163.3  |
| 77.5°  | 328.7  | 183.5  | 142.8  | 133.7  | 129.2  |
| 80°    | 246.9  | 131.5  | 108.7  | 99.8   | 99.8   |
| 82.5°  | 172.2  | 88.5   | 74.7   | 70.2   | 70.2   |
| 85°    | 97.4   | 49.8   | 43.0   | 43.0   | 43.0   |
| 87.5°  | 36.4   | 18.1   | 18.1   | 15.9   | 15.9   |
| 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  |

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**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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**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 | 13.32            | 14.18 | 14.26 | 15.13 | 16.35 | 9.30           | 10.17 | 10.24 | 11.11 | 12.33 |
|                 | 3H   | 14.98            | 15.75 | 15.92 | 16.70 | 17.95 | 10.48          | 11.25 | 11.43 | 12.20 | 13.45 |
|                 | 4H   | 15.57            | 16.30 | 16.53 | 17.26 | 18.51 | 10.92          | 11.65 | 11.88 | 12.61 | 13.86 |
|                 | 6H   | 15.98            | 16.65 | 16.95 | 17.61 | 18.88 | 11.23          | 11.90 | 12.20 | 12.86 | 14.13 |
|                 | 8H   | 16.09            | 16.73 | 17.07 | 17.71 | 18.98 | 11.31          | 11.95 | 12.29 | 12.93 | 14.20 |
|                 | 12H  | 16.15            | 16.75 | 17.13 | 17.73 | 19.02 | 11.35          | 11.96 | 12.33 | 12.93 | 14.22 |
| 4H              | 2H   | 13.34            | 14.07 | 14.31 | 15.03 | 16.28 | 9.89           | 10.62 | 10.86 | 11.58 | 12.83 |
|                 | 3H   | 15.15            | 15.75 | 16.12 | 16.74 | 18.01 | 11.23          | 11.83 | 12.20 | 12.82 | 14.09 |
|                 | 4H   | 15.82            | 16.37 | 16.80 | 17.36 | 18.65 | 11.76          | 12.31 | 12.74 | 13.30 | 14.59 |
|                 | 6H   | 16.32            | 16.79 | 17.31 | 17.80 | 19.09 | 12.17          | 12.64 | 13.16 | 13.65 | 14.94 |
|                 | 8H   | 16.48            | 16.92 | 17.47 | 17.92 | 19.23 | 12.29          | 12.73 | 13.28 | 13.73 | 15.03 |
|                 | 12H  | 16.56            | 16.96 | 17.58 | 17.98 | 19.29 | 12.34          | 12.74 | 13.36 | 13.76 | 15.07 |
| 8H              | 4H   | 15.79            | 16.23 | 16.78 | 17.23 | 18.53 | 12.03          | 12.47 | 13.03 | 13.47 | 14.78 |
|                 | 6H   | 16.33            | 16.69 | 17.35 | 17.74 | 19.04 | 12.53          | 12.89 | 13.55 | 13.93 | 15.24 |
|                 | 8H   | 16.53            | 16.85 | 17.56 | 17.88 | 19.20 | 12.71          | 13.03 | 13.73 | 14.06 | 15.38 |
|                 | 12H  | 16.65            | 16.94 | 17.69 | 17.96 | 19.33 | 12.81          | 13.10 | 13.84 | 14.12 | 15.48 |
| 12H             | 4H   | 15.74            | 16.14 | 16.75 | 17.15 | 18.46 | 12.03          | 12.43 | 13.05 | 13.45 | 14.76 |
|                 | 6H   | 16.30            | 16.63 | 17.33 | 17.65 | 18.98 | 12.57          | 12.89 | 13.60 | 13.92 | 15.24 |
|                 | 8H   | 16.51            | 16.79 | 17.54 | 17.81 | 19.18 | 12.77          | 13.05 | 13.80 | 14.07 | 15.44 |

END OF REPORT