

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: P910620

Luminaire Tested: DFN2DIP-HX2F0-020D060US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910620  
REPORT IS A COMBINATION OF REPORTS P899192 AND P896039  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-020D060US850-RLLFLL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

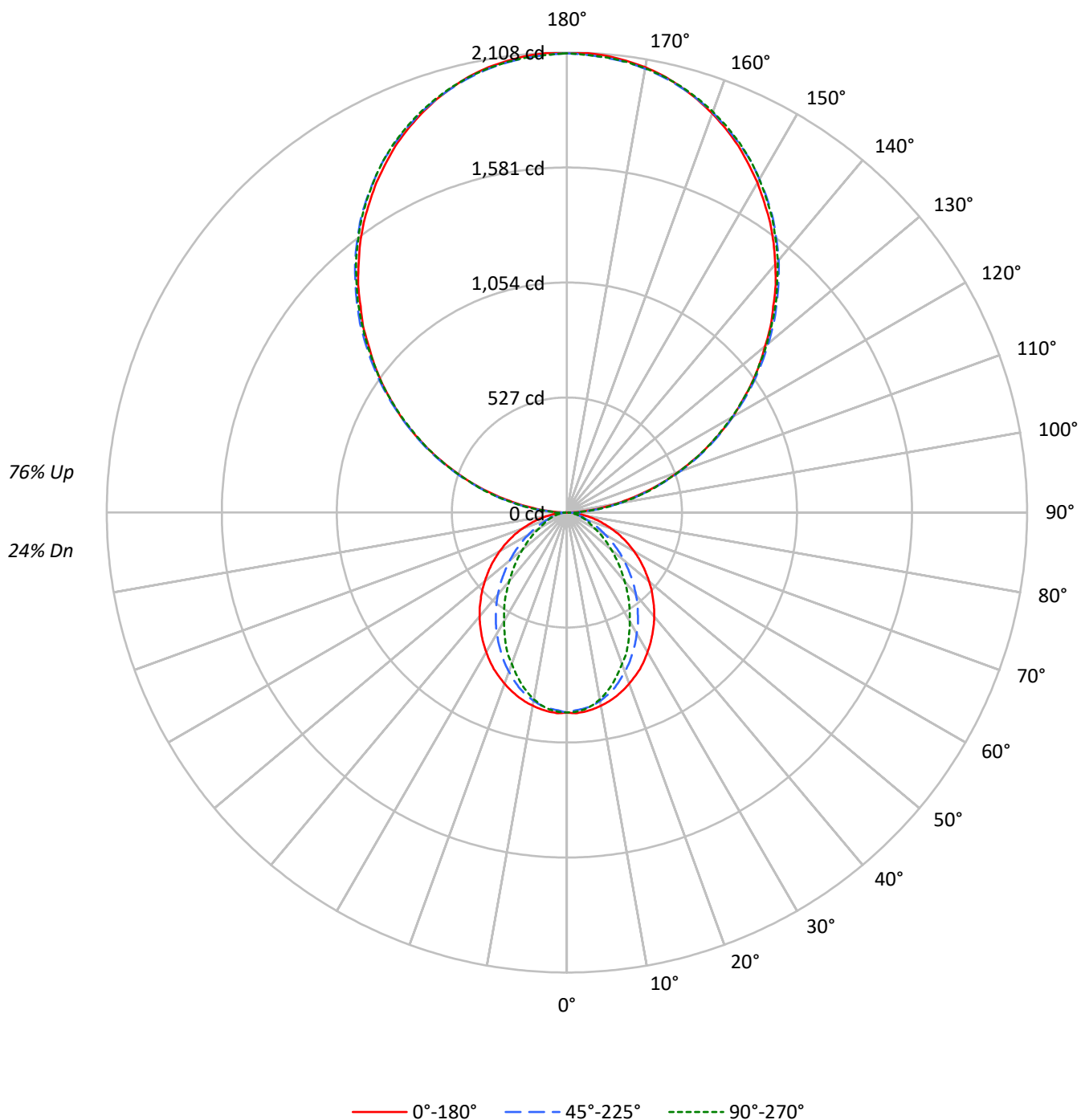
Lumens per Lamp: N/A  
Luminaire Lumens: 7774.1 lumens  
Efficiency: N/A  
Efficacy: 122.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 63.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
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: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-RLLFLL

**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   | 101 | 101 | 101 | 101 | 90 | 90 | 90 | 90 | 69 | 69 | 69 | 50 | 50 | 50 | 33 | 33 | 33 |
| 1   | 92  | 88  | 85  | 81  | 82 | 79 | 76 | 73 | 61 | 59 | 57 | 44 | 43 | 42 | 29 | 28 | 28 |
| 2   | 84  | 77  | 71  | 67  | 75 | 69 | 64 | 60 | 53 | 50 | 47 | 39 | 37 | 35 | 26 | 25 | 24 |
| 3   | 77  | 68  | 61  | 56  | 68 | 61 | 55 | 50 | 47 | 43 | 40 | 35 | 32 | 30 | 23 | 22 | 20 |
| 4   | 70  | 60  | 53  | 47  | 62 | 54 | 48 | 43 | 42 | 38 | 34 | 31 | 28 | 26 | 21 | 19 | 18 |
| 5   | 64  | 54  | 46  | 40  | 57 | 48 | 42 | 37 | 38 | 33 | 29 | 28 | 25 | 22 | 19 | 17 | 16 |
| 6   | 59  | 48  | 40  | 35  | 53 | 43 | 37 | 32 | 34 | 29 | 26 | 25 | 22 | 20 | 17 | 15 | 14 |
| 7   | 55  | 43  | 36  | 30  | 49 | 39 | 32 | 28 | 31 | 26 | 23 | 23 | 20 | 17 | 16 | 14 | 12 |
| 8   | 51  | 39  | 32  | 27  | 45 | 35 | 29 | 24 | 28 | 23 | 20 | 21 | 18 | 16 | 14 | 12 | 11 |
| 9   | 47  | 36  | 29  | 24  | 42 | 32 | 26 | 22 | 25 | 21 | 18 | 19 | 16 | 14 | 13 | 11 | 10 |
| 10  | 44  | 33  | 26  | 21  | 39 | 29 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 13 | 12 | 10 | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2160 | 2160 | 2160 |
| 5°  | 2160 | 2120 | 2135 |
| 10° | 2135 | 2074 | 2062 |
| 15° | 2102 | 2000 | 1951 |
| 20° | 2060 | 1901 | 1816 |
| 25° | 2017 | 1791 | 1686 |
| 30° | 1960 | 1678 | 1522 |
| 35° | 1903 | 1558 | 1378 |
| 40° | 1846 | 1433 | 1214 |
| 45° | 1780 | 1296 | 1066 |
| 50° | 1712 | 1158 | 921  |
| 55° | 1639 | 1012 | 782  |
| 60° | 1556 | 859  | 640  |
| 65° | 1459 | 705  | 572  |
| 70° | 1342 | 561  | 512  |
| 75° | 1195 | 484  | 458  |
| 80° | 984  | 392  | 385  |
| 85° | 643  | 241  | 270  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2821 cd/sqm

TEST NUMBER: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 85.9   | 1.1       |
| 10°-20°   | 235.8  | 3.0       |
| 20°-30°   | 331.1  | 4.3       |
| 30°-40°   | 361.0  | 4.6       |
| 40°-50°   | 331.8  | 4.3       |
| 50°-60°   | 260.6  | 3.4       |
| 60°-70°   | 169.6  | 2.2       |
| 70°-80°   | 87.3   | 1.1       |
| 80°-90°   | 28.3   | 0.4       |
| 90°-100°  | 130.2  | 1.7       |
| 100°-110° | 413.7  | 5.3       |
| 110°-120° | 708.0  | 9.1       |
| 120°-130° | 931.2  | 12.0      |
| 130°-140° | 1045.3 | 13.4      |
| 140°-150° | 1025.0 | 13.2      |
| 150°-160° | 859.8  | 11.1      |
| 160°-170° | 570.2  | 7.3       |
| 170°-180° | 199.3  | 2.6       |
| 0°-30°    | 652.9  | 8.4       |
| 0°-40°    | 1013.8 | 13.0      |
| 0°-60°    | 1606.2 | 20.7      |
| 0°-90°    | 1891.3 | 24.3      |
| 90°-120°  | 1252.0 | 16.1      |
| 90°-150°  | 4253.5 | 54.7      |
| 90°-180°  | 5883.0 | 75.7      |
| 0°-180°   | 7774.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 917  | 917   | 917  | 917   | 917  |      |
| 5°   | 917  | 913   | 902  | 909   | 907  | 87   |
| 15°  | 872  | 863   | 834  | 819   | 811  | 246  |
| 25°  | 792  | 765   | 710  | 676   | 664  | 364  |
| 35°  | 682  | 640   | 567  | 514   | 496  | 427  |
| 45°  | 558  | 502   | 415  | 356   | 336  | 431  |
| 55°  | 424  | 359   | 270  | 220   | 204  | 379  |
| 65°  | 286  | 219   | 144  | 116   | 114  | 284  |
| 75°  | 153  | 94    | 66   | 61    | 60   | 161  |
| 85°  | 36   | 18    | 16   | 16    | 16   | 41   |
| 90°  | 2    | 23    | 62   | 58    | 60   | 8    |
| 95°  | 93   | 110   | 114  | 114   | 110  | 103  |
| 105° | 382  | 387   | 391  | 394   | 394  | 403  |
| 115° | 710  | 721   | 718  | 716   | 710  | 703  |
| 125° | 1034 | 1049  | 1044 | 1039  | 1037 | 924  |
| 135° | 1337 | 1356  | 1360 | 1358  | 1353 | 1033 |
| 145° | 1623 | 1636  | 1646 | 1648  | 1641 | 1014 |
| 155° | 1856 | 1861  | 1866 | 1875  | 1870 | 854  |
| 165° | 2019 | 2017  | 2017 | 2030  | 2021 | 569  |
| 175° | 2101 | 2096  | 2092 | 2104  | 2094 | 200  |
| 180° | 2104 | 2104  | 2104 | 2104  | 2104 |      |

TEST NUMBER: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 916.7 | 916.7 | 916.7 | 916.7 | 916.7 |
| 2.5°   | 920.8 | 916.7 | 907.5 | 915.9 | 914.3 |
| 5°     | 916.7 | 912.6 | 901.7 | 909.3 | 906.7 |
| 7.5°   | 909.3 | 904.3 | 892.6 | 896.0 | 891.7 |
| 10°    | 899.3 | 893.4 | 876.9 | 874.3 | 869.5 |
| 12.5°  | 886.9 | 879.3 | 856.9 | 852.0 | 842.8 |
| 15°    | 871.9 | 862.7 | 834.5 | 818.8 | 810.6 |
| 17.5°  | 854.5 | 841.2 | 806.4 | 788.1 | 774.9 |
| 20°    | 834.5 | 817.9 | 776.5 | 755.8 | 737.5 |
| 22.5°  | 813.0 | 793.9 | 745.8 | 717.6 | 705.2 |
| 25°    | 791.5 | 764.9 | 710.1 | 676.2 | 663.6 |
| 27.5°  | 765.8 | 737.5 | 676.9 | 637.9 | 618.8 |
| 30°    | 738.4 | 706.8 | 640.4 | 598.2 | 575.7 |
| 32.5°  | 711.8 | 673.6 | 605.6 | 555.8 | 535.1 |
| 35°    | 681.9 | 639.7 | 566.7 | 514.4 | 496.1 |
| 37.5°  | 652.9 | 607.2 | 530.1 | 472.9 | 452.1 |
| 40°    | 622.1 | 572.5 | 492.0 | 433.1 | 411.4 |
| 42.5°  | 590.7 | 537.6 | 453.8 | 392.4 | 371.7 |
| 45°    | 557.5 | 501.8 | 414.9 | 355.9 | 335.9 |
| 47.5°  | 526.0 | 467.1 | 377.5 | 318.5 | 300.3 |
| 50°    | 491.2 | 432.3 | 341.0 | 283.7 | 266.4 |
| 52.5°  | 457.0 | 394.8 | 306.1 | 251.4 | 235.7 |
| 55°    | 423.9 | 359.2 | 269.6 | 219.9 | 204.1 |
| 57.5°  | 389.9 | 323.5 | 237.3 | 190.9 | 177.6 |
| 60°    | 355.1 | 288.7 | 203.3 | 161.0 | 147.7 |
| 62.5°  | 321.1 | 254.7 | 174.2 | 134.4 | 127.8 |
| 65°    | 286.2 | 219.0 | 144.4 | 116.2 | 113.7 |
| 67.5°  | 253.1 | 185.8 | 116.2 | 102.0 | 99.6  |
| 70°    | 218.1 | 153.5 | 96.2  | 87.9  | 84.6  |
| 72.5°  | 185.0 | 123.5 | 80.4  | 73.9  | 72.2  |
| 75°    | 152.6 | 94.5  | 66.3  | 60.6  | 59.8  |
| 77.5°  | 120.3 | 67.2  | 52.2  | 48.9  | 47.2  |
| 80°    | 90.4  | 48.1  | 39.8  | 36.5  | 36.5  |
| 82.5°  | 63.0  | 32.4  | 27.4  | 25.7  | 25.7  |
| 85°    | 35.6  | 18.2  | 15.7  | 15.7  | 15.7  |
| 87.5°  | 13.3  | 6.7   | 6.7   | 5.8   | 5.8   |
| 90°    | 1.9   | 22.8  | 62.2  | 58.3  | 60.2  |
| 92.5°  | 39.4  | 53.3  | 55.2  | 57.1  | 57.1  |
| 95°    | 92.6  | 110.3 | 113.6 | 113.6 | 110.3 |
| 97.5°  | 154.2 | 170.7 | 177.7 | 177.7 | 177.7 |
| 100°   | 225.2 | 239.8 | 244.9 | 244.9 | 243.0 |
| 102.5° | 300.1 | 310.9 | 317.8 | 319.7 | 317.8 |
| 105°   | 381.9 | 387.0 | 390.8 | 394.0 | 394.0 |
| 107.5° | 463.1 | 470.8 | 470.8 | 472.0 | 463.1 |
| 110°   | 541.9 | 551.9 | 551.9 | 551.9 | 546.8 |

TEST NUMBER: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 626.8  | 637.6  | 635.7  | 630.6  | 626.8  |
| 115°   | 710.5  | 720.7  | 717.5  | 715.6  | 710.5  |
| 117.5° | 793.7  | 807.7  | 798.7  | 793.7  | 788.6  |
| 120°   | 877.4  | 891.4  | 877.4  | 877.4  | 871.7  |
| 122.5° | 953.5  | 971.3  | 962.4  | 957.4  | 953.5  |
| 125°   | 1033.5 | 1049.3 | 1044.2 | 1038.6 | 1036.7 |
| 127.5° | 1111.6 | 1131.2 | 1124.2 | 1116.7 | 1111.6 |
| 130°   | 1184.5 | 1207.4 | 1204.2 | 1200.4 | 1193.4 |
| 132.5° | 1266.4 | 1284.1 | 1285.3 | 1276.5 | 1271.4 |
| 135°   | 1336.8 | 1356.4 | 1360.2 | 1358.3 | 1353.2 |
| 137.5° | 1415.4 | 1431.3 | 1434.5 | 1433.2 | 1425.6 |
| 140°   | 1484.6 | 1500.5 | 1509.3 | 1509.3 | 1502.4 |
| 142.5° | 1555.6 | 1571.5 | 1576.6 | 1578.4 | 1571.5 |
| 145°   | 1622.9 | 1635.6 | 1645.8 | 1647.6 | 1640.7 |
| 147.5° | 1683.1 | 1699.0 | 1706.6 | 1709.7 | 1702.8 |
| 150°   | 1745.3 | 1756.1 | 1763.1 | 1768.7 | 1763.1 |
| 152.5° | 1800.5 | 1811.3 | 1820.2 | 1827.2 | 1820.2 |
| 155°   | 1855.7 | 1860.8 | 1866.4 | 1875.4 | 1869.7 |
| 157.5° | 1903.3 | 1907.1 | 1910.3 | 1923.0 | 1914.1 |
| 160°   | 1945.9 | 1949.6 | 1951.5 | 1962.3 | 1954.7 |
| 162.5° | 1985.1 | 1985.1 | 1987.0 | 1999.1 | 1990.2 |
| 165°   | 2018.7 | 2016.8 | 2016.8 | 2029.6 | 2020.7 |
| 167.5° | 2049.2 | 2043.6 | 2043.6 | 2056.2 | 2047.3 |
| 170°   | 2072.1 | 2067.0 | 2065.1 | 2077.7 | 2067.0 |
| 172.5° | 2087.9 | 2082.8 | 2080.9 | 2093.6 | 2082.8 |
| 175°   | 2100.6 | 2095.6 | 2091.7 | 2104.4 | 2093.6 |
| 177.5° | 2107.5 | 2102.6 | 2098.7 | 2109.4 | 2098.7 |
| 180°   | 2104.4 | 2104.4 | 2104.4 | 2104.4 | 2104.4 |

TEST NUMBER: P910620

CATALOG NUMBER: DFN2DIP-HX2F0-020D060US850-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 | 6.60             | 7.26  | 7.75  | 8.40  | 9.99  | 2.59           | 3.24 | 3.74 | 4.38 | 5.98 |
|                 | 3H   | 8.24             | 8.83  | 9.40  | 9.97  | 11.59 | 3.74           | 4.33 | 4.91 | 5.48 | 7.09 |
|                 | 4H   | 8.82             | 9.38  | 9.99  | 10.53 | 12.14 | 4.17           | 4.73 | 5.34 | 5.88 | 7.50 |
|                 | 6H   | 9.21             | 9.73  | 10.39 | 10.88 | 12.51 | 4.47           | 4.98 | 5.65 | 6.13 | 7.76 |
|                 | 8H   | 9.32             | 9.81  | 10.50 | 10.98 | 12.60 | 4.55           | 5.04 | 5.73 | 6.20 | 7.82 |
|                 | 12H  | 9.37             | 9.83  | 10.55 | 10.99 | 12.63 | 4.58           | 5.04 | 5.76 | 6.20 | 7.84 |
| 4H              | 2H   | 6.59             | 7.15  | 7.77  | 8.30  | 9.92  | 3.15           | 3.70 | 4.32 | 4.85 | 6.47 |
|                 | 3H   | 8.38             | 8.84  | 9.56  | 10.01 | 11.64 | 4.46           | 4.92 | 5.64 | 6.10 | 7.73 |
|                 | 4H   | 9.04             | 9.47  | 10.23 | 10.63 | 12.28 | 4.99           | 5.41 | 6.17 | 6.57 | 8.22 |
|                 | 6H   | 9.52             | 9.89  | 10.71 | 11.07 | 12.71 | 5.38           | 5.74 | 6.56 | 6.93 | 8.56 |
|                 | 8H   | 9.68             | 10.02 | 10.87 | 11.20 | 12.85 | 5.49           | 5.83 | 6.68 | 7.01 | 8.66 |
|                 | 12H  | 9.76             | 10.07 | 10.96 | 11.25 | 12.91 | 5.54           | 5.85 | 6.74 | 7.03 | 8.69 |
| 8H              | 4H   | 8.99             | 9.33  | 10.18 | 10.51 | 12.16 | 5.24           | 5.58 | 6.42 | 6.75 | 8.41 |
|                 | 6H   | 9.53             | 9.81  | 10.73 | 11.02 | 12.67 | 5.72           | 6.01 | 6.93 | 7.22 | 8.87 |
|                 | 8H   | 9.73             | 9.97  | 10.94 | 11.16 | 12.84 | 5.90           | 6.15 | 7.11 | 7.34 | 9.01 |
|                 | 12H  | 9.84             | 10.05 | 11.05 | 11.25 | 12.95 | 6.00           | 6.21 | 7.21 | 7.41 | 9.11 |
| 12H             | 4H   | 8.94             | 9.25  | 10.14 | 10.43 | 12.09 | 5.23           | 5.54 | 6.43 | 6.73 | 8.38 |
|                 | 6H   | 9.50             | 9.74  | 10.71 | 10.94 | 12.61 | 5.77           | 6.01 | 6.98 | 7.21 | 8.88 |
|                 | 8H   | 9.69             | 9.91  | 10.91 | 11.10 | 12.80 | 5.95           | 6.17 | 7.17 | 7.36 | 9.06 |

END OF REPORT