

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: P924401

Luminaire Tested: DFN2DIP-HX3F0-050D050US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924401  
REPORT IS A COMBINATION OF REPORTS P900754 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-050D050US950-RLLONL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

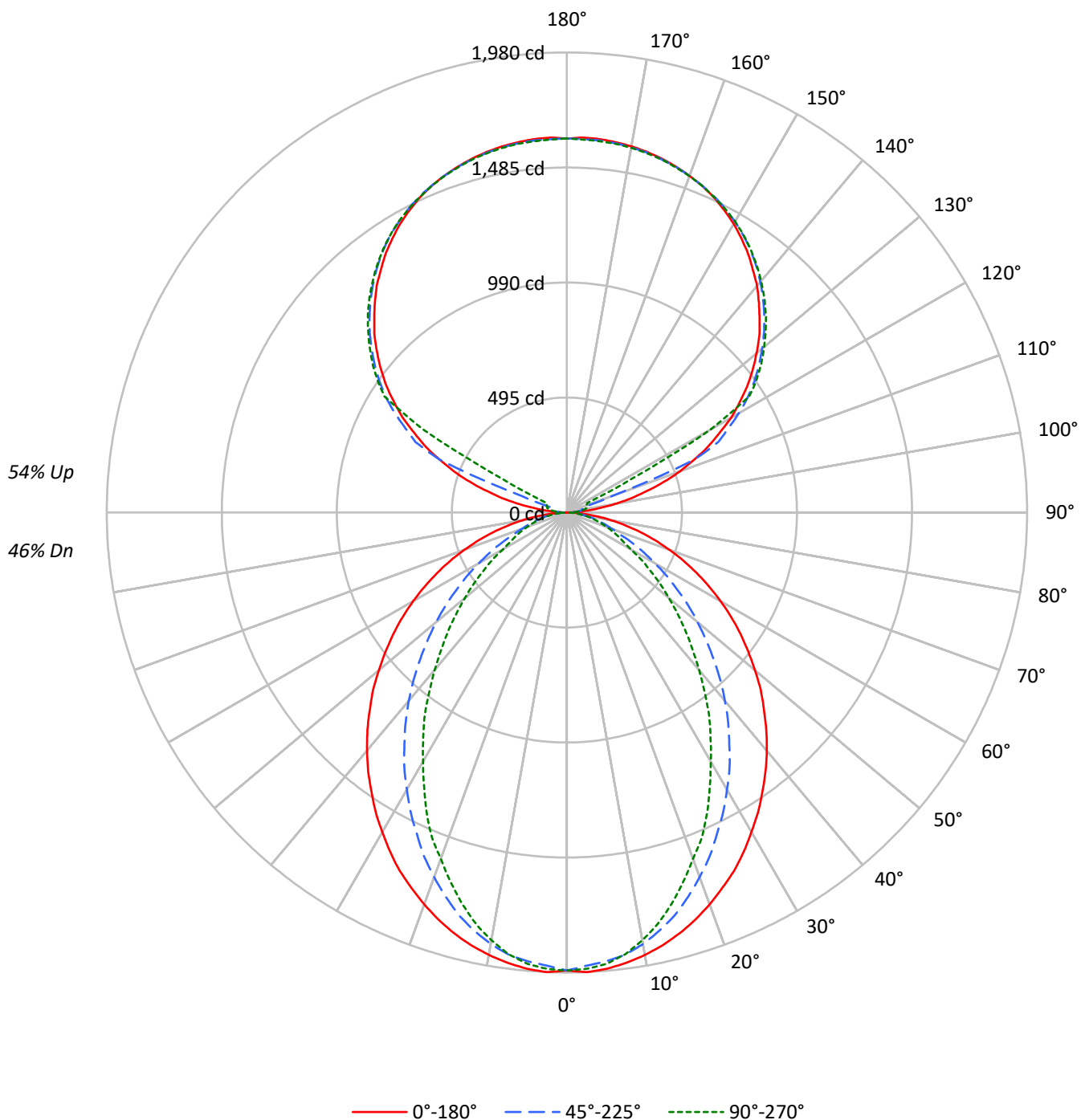
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8776.9 lumens  
Efficiency: N/A  
Efficacy: 107.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 81.4  
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 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |    |    | 46 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |    |    | 40 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |    |    | 34 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |    |    | 29 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |    |    | 26 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |    |    | 23 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |    |    | 20 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |    |    | 18 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |    |    | 16 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |    |    | 15 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |    |    | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2284 | 2284 | 2284 |
| 5°  | 2286 | 2246 | 2261 |
| 10° | 2263 | 2200 | 2186 |
| 15° | 2230 | 2126 | 2071 |
| 20° | 2188 | 2024 | 1930 |
| 25° | 2145 | 1910 | 1795 |
| 30° | 2087 | 1794 | 1623 |
| 35° | 2030 | 1669 | 1472 |
| 40° | 1973 | 1540 | 1300 |
| 45° | 1906 | 1396 | 1143 |
| 50° | 1837 | 1252 | 991  |
| 55° | 1764 | 1098 | 844  |
| 60° | 1680 | 937  | 693  |
| 65° | 1583 | 774  | 623  |
| 70° | 1466 | 621  | 562  |
| 75° | 1319 | 544  | 508  |
| 80° | 1105 | 452  | 436  |
| 85° | 756  | 294  | 321  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1906 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 184.8  | 2.1       |
| 10°-20°   | 507.2  | 5.8       |
| 20°-30°   | 712.1  | 8.1       |
| 30°-40°   | 776.3  | 8.8       |
| 40°-50°   | 713.5  | 8.1       |
| 50°-60°   | 560.3  | 6.4       |
| 60°-70°   | 364.7  | 4.2       |
| 70°-80°   | 187.7  | 2.1       |
| 80°-90°   | 50.8   | 0.6       |
| 90°-100°  | 53.1   | 0.6       |
| 100°-110° | 197.9  | 2.3       |
| 110°-120° | 524.8  | 6.0       |
| 120°-130° | 870.4  | 9.9       |
| 130°-140° | 924.6  | 10.5      |
| 140°-150° | 859.3  | 9.8       |
| 150°-160° | 690.9  | 7.9       |
| 160°-170° | 445.2  | 5.1       |
| 170°-180° | 153.2  | 1.7       |
| 0°-30°    | 1404.1 | 16.0      |
| 0°-40°    | 2180.4 | 24.8      |
| 0°-60°    | 3454.1 | 39.4      |
| 0°-90°    | 4057.4 | 46.2      |
| 90°-120°  | 775.8  | 8.8       |
| 90°-150°  | 3430.2 | 39.1      |
| 90°-180°  | 4719.0 | 53.8      |
| 0°-180°   | 8776.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1971 | 1971  | 1971 | 1971  | 1971 |      |
| 5°   | 1971 | 1963  | 1939 | 1955  | 1950 | 187  |
| 15°  | 1875 | 1855  | 1795 | 1761  | 1743 | 528  |
| 25°  | 1702 | 1645  | 1527 | 1454  | 1427 | 783  |
| 35°  | 1467 | 1376  | 1219 | 1106  | 1067 | 918  |
| 45°  | 1199 | 1079  | 892  | 765   | 722  | 926  |
| 55°  | 912  | 772   | 580  | 473   | 439  | 815  |
| 65°  | 616  | 471   | 310  | 250   | 244  | 610  |
| 75°  | 328  | 203   | 143  | 130   | 128  | 347  |
| 85°  | 77   | 39    | 34   | 34    | 34   | 88   |
| 90°  | 1    | 14    | 23   | 29    | 31   | 8    |
| 95°  | 76   | 37    | 45   | 51    | 50   | 90   |
| 105° | 354  | 389   | 71   | 84    | 88   | 378  |
| 115° | 670  | 690   | 719  | 179   | 96   | 659  |
| 125° | 947  | 962   | 984  | 992   | 996  | 845  |
| 135° | 1172 | 1191  | 1201 | 1213  | 1210 | 905  |
| 145° | 1359 | 1358  | 1378 | 1386  | 1380 | 850  |
| 155° | 1497 | 1486  | 1500 | 1507  | 1498 | 690  |
| 165° | 1577 | 1570  | 1574 | 1582  | 1574 | 446  |
| 175° | 1613 | 1605  | 1608 | 1616  | 1604 | 154  |
| 180° | 1610 | 1610  | 1610 | 1610  | 1610 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1971.4 | 1971.4 | 1971.4 | 1971.4 | 1971.4 |
| 2.5°   | 1980.3 | 1971.4 | 1951.8 | 1969.7 | 1966.1 |
| 5°     | 1971.4 | 1962.6 | 1939.3 | 1955.3 | 1950.1 |
| 7.5°   | 1955.3 | 1944.7 | 1919.7 | 1926.8 | 1917.8 |
| 10°    | 1933.9 | 1921.5 | 1885.9 | 1880.4 | 1869.7 |
| 12.5°  | 1907.2 | 1891.2 | 1842.9 | 1832.3 | 1812.6 |
| 15°    | 1875.1 | 1855.4 | 1794.9 | 1761.0 | 1743.1 |
| 17.5°  | 1837.6 | 1809.1 | 1734.1 | 1694.9 | 1666.3 |
| 20°    | 1794.9 | 1759.1 | 1669.9 | 1625.4 | 1586.0 |
| 22.5°  | 1748.5 | 1707.4 | 1603.9 | 1543.3 | 1516.6 |
| 25°    | 1702.0 | 1644.9 | 1527.2 | 1454.1 | 1427.2 |
| 27.5°  | 1646.8 | 1586.0 | 1455.8 | 1371.9 | 1330.9 |
| 30°    | 1587.9 | 1520.0 | 1377.3 | 1286.4 | 1238.1 |
| 32.5°  | 1530.8 | 1448.6 | 1302.5 | 1195.4 | 1150.7 |
| 35°    | 1466.6 | 1375.6 | 1218.6 | 1106.2 | 1066.9 |
| 37.5°  | 1404.1 | 1305.9 | 1140.1 | 1016.9 | 972.4  |
| 40°    | 1338.1 | 1231.1 | 1057.9 | 931.3  | 884.9  |
| 42.5°  | 1270.3 | 1156.2 | 975.9  | 843.8  | 799.4  |
| 45°    | 1199.0 | 1079.4 | 892.1  | 765.3  | 722.5  |
| 47.5°  | 1131.2 | 1004.6 | 811.9  | 685.1  | 645.9  |
| 50°    | 1056.3 | 929.6  | 733.3  | 610.1  | 572.8  |
| 52.5°  | 983.0  | 849.2  | 658.4  | 540.6  | 506.8  |
| 55°    | 911.6  | 772.5  | 579.7  | 472.8  | 438.9  |
| 57.5°  | 838.6  | 695.8  | 510.3  | 410.4  | 381.8  |
| 60°    | 763.6  | 620.9  | 437.0  | 346.2  | 317.6  |
| 62.5°  | 690.5  | 547.8  | 374.6  | 289.1  | 274.8  |
| 65°    | 615.5  | 471.0  | 310.4  | 249.9  | 244.4  |
| 67.5°  | 544.2  | 399.6  | 249.9  | 219.4  | 214.1  |
| 70°    | 469.3  | 330.1  | 206.9  | 189.1  | 181.9  |
| 72.5°  | 397.9  | 265.8  | 173.1  | 158.8  | 155.2  |
| 75°    | 328.3  | 203.3  | 142.7  | 130.2  | 128.5  |
| 77.5°  | 258.7  | 144.4  | 112.5  | 105.2  | 101.6  |
| 80°    | 194.4  | 103.5  | 85.6   | 78.5   | 78.5   |
| 82.5°  | 135.6  | 69.6   | 58.9   | 55.2   | 55.2   |
| 85°    | 76.7   | 39.2   | 33.9   | 33.9   | 33.9   |
| 87.5°  | 28.6   | 14.2   | 14.2   | 12.5   | 12.5   |
| 90°    | 1.1    | 13.9   | 23.3   | 29.2   | 31.4   |
| 92.5°  | 29.2   | 24.5   | 28.0   | 30.3   | 31.4   |
| 95°    | 75.7   | 37.2   | 45.4   | 51.3   | 50.1   |
| 97.5°  | 136.2  | 40.8   | 59.3   | 63.0   | 64.0   |
| 100°   | 206.3  | 46.7   | 66.4   | 75.7   | 78.0   |
| 102.5° | 283.1  | 280.8  | 68.8   | 81.5   | 85.1   |
| 105°   | 354.1  | 389.1  | 71.1   | 83.9   | 88.5   |
| 107.5° | 436.8  | 465.8  | 73.5   | 86.1   | 90.9   |
| 110°   | 516.1  | 540.4  | 203.9  | 87.4   | 92.0   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 590.6  | 611.5  | 591.8  | 89.7   | 93.2   |
| 115°   | 669.8  | 689.6  | 718.7  | 179.4  | 95.6   |
| 117.5° | 738.5  | 761.8  | 781.7  | 614.9  | 309.9  |
| 120°   | 815.4  | 832.8  | 853.8  | 867.9  | 710.5  |
| 122.5° | 880.5  | 899.2  | 922.6  | 929.6  | 930.8  |
| 125°   | 946.9  | 962.2  | 984.3  | 992.4  | 996.0  |
| 127.5° | 1007.5 | 1023.8 | 1041.5 | 1053.0 | 1054.2 |
| 130°   | 1064.7 | 1083.4 | 1096.1 | 1108.9 | 1107.9 |
| 132.5° | 1123.0 | 1138.1 | 1150.8 | 1161.4 | 1160.3 |
| 135°   | 1171.9 | 1190.6 | 1200.9 | 1212.7 | 1210.3 |
| 137.5° | 1223.0 | 1237.1 | 1248.8 | 1260.4 | 1257.0 |
| 140°   | 1273.1 | 1282.6 | 1295.2 | 1305.7 | 1300.0 |
| 142.5° | 1315.2 | 1323.4 | 1338.5 | 1347.7 | 1341.9 |
| 145°   | 1359.4 | 1358.2 | 1378.0 | 1386.2 | 1380.3 |
| 147.5° | 1397.8 | 1394.3 | 1414.1 | 1419.9 | 1415.4 |
| 150°   | 1435.1 | 1427.0 | 1445.6 | 1452.6 | 1446.7 |
| 152.5° | 1466.5 | 1457.2 | 1474.7 | 1481.8 | 1473.5 |
| 155°   | 1496.8 | 1486.4 | 1500.4 | 1507.3 | 1498.1 |
| 157.5° | 1521.2 | 1512.0 | 1522.5 | 1530.7 | 1521.2 |
| 160°   | 1542.3 | 1535.3 | 1542.3 | 1549.2 | 1541.1 |
| 162.5° | 1560.8 | 1554.0 | 1559.7 | 1567.9 | 1557.4 |
| 165°   | 1577.2 | 1570.3 | 1573.7 | 1581.8 | 1573.7 |
| 167.5° | 1590.0 | 1583.0 | 1586.6 | 1594.7 | 1584.2 |
| 170°   | 1600.5 | 1593.5 | 1595.9 | 1604.0 | 1593.5 |
| 172.5° | 1607.5 | 1600.5 | 1602.9 | 1611.0 | 1600.5 |
| 175°   | 1613.3 | 1605.1 | 1607.5 | 1615.6 | 1604.0 |
| 177.5° | 1615.6 | 1607.5 | 1608.7 | 1616.8 | 1606.3 |
| 180°   | 1609.8 | 1609.8 | 1609.8 | 1609.8 | 1609.8 |

TEST NUMBER: P924401

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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 | 9.61             | 10.41 | 10.60 | 11.41 | 12.74 | 5.59           | 6.39 | 6.58  | 7.39  | 8.72  |
|                 | 3H   | 11.28            | 11.99 | 12.28 | 13.00 | 14.35 | 6.77           | 7.48 | 7.77  | 8.49  | 9.84  |
|                 | 4H   | 11.88            | 12.56 | 12.90 | 13.57 | 14.93 | 7.21           | 7.89 | 8.23  | 8.91  | 10.26 |
|                 | 6H   | 12.29            | 12.92 | 13.32 | 13.93 | 15.30 | 7.53           | 8.15 | 8.56  | 9.17  | 10.54 |
|                 | 8H   | 12.41            | 13.01 | 13.45 | 14.04 | 15.41 | 7.62           | 8.21 | 8.65  | 9.24  | 10.61 |
|                 | 12H  | 12.47            | 13.04 | 13.51 | 14.06 | 15.45 | 7.66           | 8.22 | 8.70  | 9.25  | 10.64 |
| 4H              | 2H   | 9.62             | 10.30 | 10.65 | 11.31 | 12.67 | 6.17           | 6.85 | 7.20  | 7.86  | 9.22  |
|                 | 3H   | 11.44            | 12.00 | 12.47 | 13.05 | 14.42 | 7.52           | 8.08 | 8.55  | 9.12  | 10.49 |
|                 | 4H   | 12.13            | 12.64 | 13.17 | 13.68 | 15.07 | 8.06           | 8.57 | 9.10  | 9.61  | 11.00 |
|                 | 6H   | 12.63            | 13.07 | 13.68 | 14.13 | 15.52 | 8.47           | 8.91 | 9.52  | 9.97  | 11.36 |
|                 | 8H   | 12.80            | 13.21 | 13.85 | 14.27 | 15.67 | 8.60           | 9.01 | 9.65  | 10.06 | 11.46 |
|                 | 12H  | 12.89            | 13.26 | 13.96 | 14.33 | 15.74 | 8.66           | 9.03 | 9.73  | 10.09 | 11.50 |
| 8H              | 4H   | 12.09            | 12.50 | 13.14 | 13.55 | 14.96 | 8.33           | 8.74 | 9.38  | 9.79  | 11.20 |
|                 | 6H   | 12.65            | 12.99 | 13.72 | 14.08 | 15.48 | 8.84           | 9.18 | 9.92  | 10.28 | 11.67 |
|                 | 8H   | 12.86            | 13.16 | 13.94 | 14.23 | 15.65 | 9.03           | 9.33 | 10.11 | 10.40 | 11.82 |
|                 | 12H  | 12.99            | 13.25 | 14.07 | 14.32 | 15.78 | 9.14           | 9.41 | 10.23 | 10.48 | 11.94 |
| 12H             | 4H   | 12.04            | 12.41 | 13.11 | 13.48 | 14.89 | 8.33           | 8.71 | 9.40  | 9.77  | 11.18 |
|                 | 6H   | 12.62            | 12.92 | 13.70 | 14.00 | 15.42 | 8.89           | 9.19 | 9.97  | 10.27 | 11.68 |
|                 | 8H   | 12.84            | 13.10 | 13.92 | 14.17 | 15.63 | 9.09           | 9.36 | 10.18 | 10.43 | 11.89 |

END OF REPORT