

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: P904417

Luminaire Tested: DFN2DIP-TR3F0-050D040US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904417  
REPORT IS A COMBINATION OF REPORTS P901809 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-050D040US830-FLLONL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

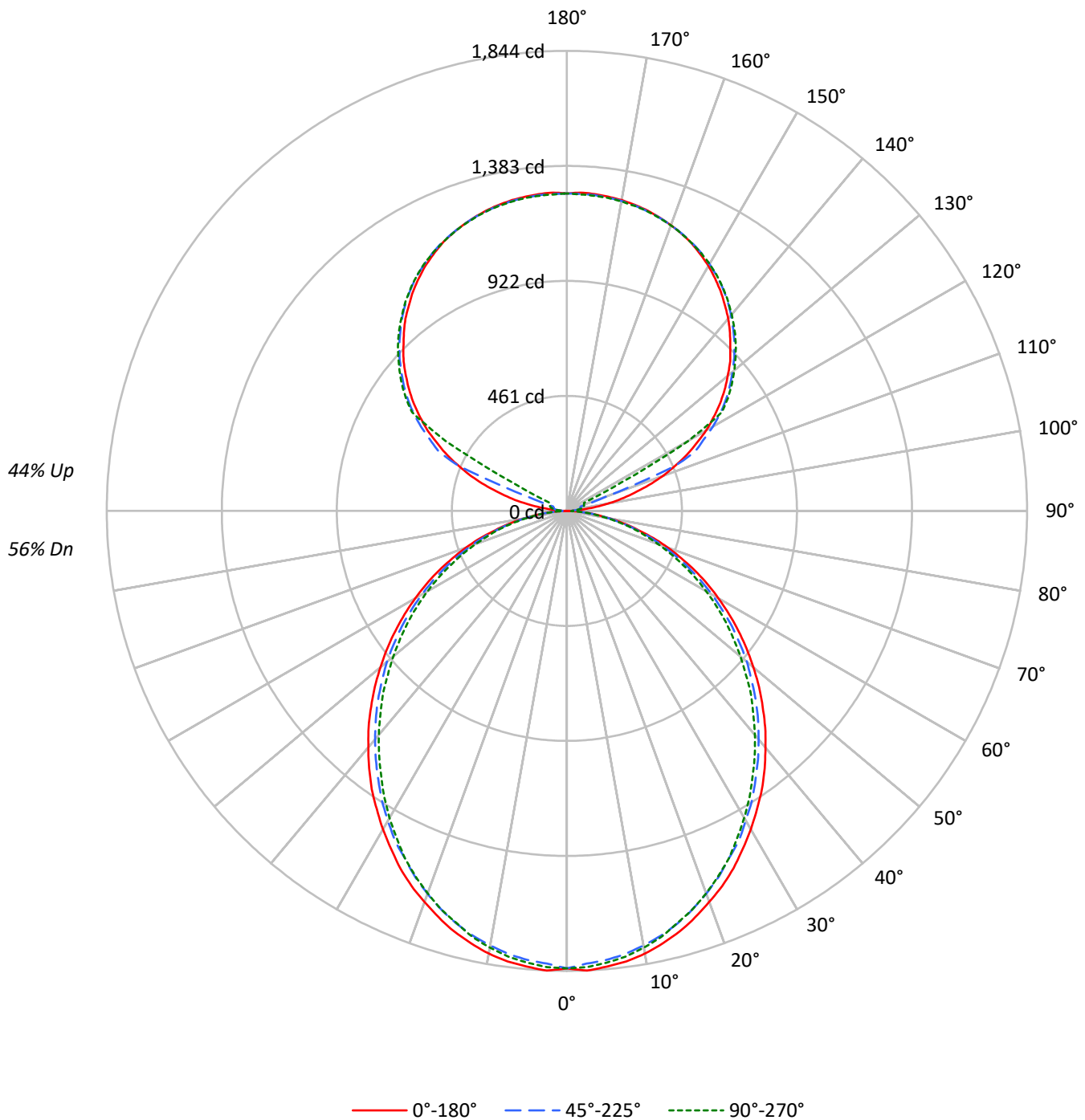
Lumens per Lamp: N/A  
Luminaire Lumens: 8398.1 lumens  
Efficiency: N/A  
Efficacy: 112.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 74.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-TR3F0-050D040US830-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P904417

CATALOG NUMBER: DFN2DIP-TR3F0-050D040US830-FLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |  |     |     |     |     |  |    |    |    |  |    |    |    |  |    |    |    |
|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|--|----|----|----|--|----|----|----|--|----|----|----|
| RF  | 20  |     |     |     |  | 20  |     |     |     |  | 20 |    |    |  |    | 20 |    |  |    |    | 20 |
| RC  | 80  |     |     |     |  | 70  |     |     |     |  | 50 |    |    |  |    | 30 |    |  |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  |  | 70  | 50  | 30  | 10  |  | 50 | 30 | 10 |  | 50 | 30 | 10 |  | 50 | 30 | 10 |
| RCR |     |     |     |     |  |     |     |     |     |  |    |    |    |  |    |    |    |  |    |    |    |
| 0   | 108 | 108 | 108 | 108 |  | 101 | 101 | 101 | 101 |  | 86 | 86 | 86 |  | 73 | 73 | 73 |  | 61 | 61 | 61 |
| 1   | 99  | 95  | 91  | 87  |  | 92  | 88  | 85  | 82  |  | 76 | 73 | 71 |  | 65 | 63 | 61 |  | 54 | 53 | 52 |
| 2   | 90  | 83  | 76  | 71  |  | 84  | 77  | 72  | 67  |  | 66 | 62 | 59 |  | 57 | 54 | 51 |  | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 59  |  | 76  | 68  | 61  | 56  |  | 59 | 54 | 50 |  | 50 | 46 | 43 |  | 42 | 39 | 37 |
| 4   | 75  | 64  | 56  | 50  |  | 70  | 60  | 53  | 48  |  | 52 | 47 | 42 |  | 45 | 40 | 37 |  | 38 | 35 | 32 |
| 5   | 69  | 57  | 49  | 43  |  | 64  | 54  | 46  | 41  |  | 47 | 41 | 36 |  | 40 | 36 | 32 |  | 34 | 31 | 28 |
| 6   | 64  | 52  | 43  | 37  |  | 59  | 48  | 41  | 36  |  | 42 | 36 | 32 |  | 36 | 32 | 28 |  | 31 | 27 | 25 |
| 7   | 59  | 47  | 39  | 33  |  | 55  | 44  | 36  | 31  |  | 38 | 32 | 28 |  | 33 | 28 | 25 |  | 28 | 25 | 22 |
| 8   | 55  | 42  | 34  | 29  |  | 51  | 40  | 33  | 28  |  | 35 | 29 | 25 |  | 30 | 26 | 22 |  | 26 | 22 | 20 |
| 9   | 51  | 39  | 31  | 26  |  | 47  | 36  | 29  | 25  |  | 32 | 26 | 22 |  | 28 | 23 | 20 |  | 24 | 20 | 18 |
| 10  | 48  | 35  | 28  | 23  |  | 44  | 33  | 27  | 22  |  | 29 | 24 | 20 |  | 26 | 21 | 18 |  | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2285 | 2285 | 2285 |
| 5°  | 2287 | 2251 | 2267 |
| 10° | 2268 | 2219 | 2235 |
| 15° | 2233 | 2181 | 2185 |
| 20° | 2187 | 2128 | 2135 |
| 25° | 2141 | 2065 | 2076 |
| 30° | 2083 | 2007 | 2003 |
| 35° | 2028 | 1938 | 1925 |
| 40° | 1962 | 1869 | 1851 |
| 45° | 1895 | 1799 | 1775 |
| 50° | 1822 | 1726 | 1687 |
| 55° | 1745 | 1641 | 1606 |
| 60° | 1658 | 1541 | 1513 |
| 65° | 1563 | 1437 | 1403 |
| 70° | 1442 | 1310 | 1285 |
| 75° | 1275 | 1158 | 1173 |
| 80° | 1073 | 963  | 964  |
| 85° | 758  | 634  | 622  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1895 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 172.6  | 2.1       |
| 10°-20°   | 485.6  | 5.8       |
| 20°-30°   | 713.7  | 8.5       |
| 30°-40°   | 828.9  | 9.9       |
| 40°-50°   | 827.8  | 9.9       |
| 50°-60°   | 721.8  | 8.6       |
| 60°-70°   | 533.6  | 6.4       |
| 70°-80°   | 301.9  | 3.6       |
| 80°-90°   | 81.9   | 1.0       |
| 90°-100°  | 41.9   | 0.5       |
| 100°-110° | 156.4  | 1.9       |
| 110°-120° | 414.8  | 4.9       |
| 120°-130° | 688.0  | 8.2       |
| 130°-140° | 730.8  | 8.7       |
| 140°-150° | 679.2  | 8.1       |
| 150°-160° | 546.1  | 6.5       |
| 160°-170° | 351.9  | 4.2       |
| 170°-180° | 121.1  | 1.4       |
| 0°-30°    | 1371.9 | 16.3      |
| 0°-40°    | 2200.7 | 26.2      |
| 0°-60°    | 3750.4 | 44.7      |
| 0°-90°    | 4667.8 | 55.6      |
| 90°-120°  | 613.2  | 7.3       |
| 90°-150°  | 2711.2 | 32.3      |
| 90°-180°  | 3730.0 | 44.4      |
| 0°-180°   | 8398.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1834 | 1834  | 1834 | 1834  | 1834 |      |
| 5°   | 1834 | 1827  | 1807 | 1821  | 1818 | 174  |
| 15°  | 1746 | 1735  | 1712 | 1719  | 1710 | 492  |
| 25°  | 1580 | 1566  | 1536 | 1539  | 1536 | 727  |
| 35°  | 1363 | 1346  | 1317 | 1307  | 1298 | 851  |
| 45°  | 1109 | 1097  | 1070 | 1051  | 1044 | 856  |
| 55°  | 839  | 829   | 808  | 786   | 778  | 750  |
| 65°  | 566  | 555   | 538  | 522   | 513  | 560  |
| 75°  | 296  | 293   | 284  | 273   | 277  | 316  |
| 85°  | 72   | 70    | 69   | 63    | 62   | 81   |
| 90°  | 1    | 11    | 18   | 23    | 25   | 8    |
| 95°  | 60   | 29    | 36   | 40    | 40   | 71   |
| 105° | 280  | 308   | 56   | 66    | 70   | 299  |
| 115° | 529  | 545   | 568  | 142   | 76   | 521  |
| 125° | 748  | 760   | 778  | 784   | 787  | 668  |
| 135° | 926  | 941   | 949  | 958   | 957  | 715  |
| 145° | 1074 | 1074  | 1089 | 1096  | 1091 | 672  |
| 155° | 1183 | 1175  | 1186 | 1191  | 1184 | 545  |
| 165° | 1247 | 1241  | 1244 | 1250  | 1244 | 352  |
| 175° | 1275 | 1269  | 1270 | 1277  | 1268 | 121  |
| 180° | 1272 | 1272  | 1272 | 1272  | 1272 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.7 | 1833.7 | 1833.7 | 1833.7 | 1833.7 |
| 2.5°   | 1844.4 | 1835.6 | 1816.2 | 1833.7 | 1830.4 |
| 5°     | 1833.7 | 1826.8 | 1807.3 | 1821.4 | 1818.1 |
| 7.5°   | 1821.4 | 1810.9 | 1791.5 | 1805.7 | 1802.1 |
| 10°    | 1802.1 | 1789.8 | 1768.7 | 1782.6 | 1777.4 |
| 12.5°  | 1775.6 | 1765.1 | 1744.0 | 1752.8 | 1749.2 |
| 15°    | 1745.6 | 1735.1 | 1712.1 | 1719.3 | 1710.4 |
| 17.5°  | 1708.5 | 1698.1 | 1675.1 | 1683.9 | 1675.1 |
| 20°    | 1668.0 | 1657.6 | 1632.9 | 1638.0 | 1631.2 |
| 22.5°  | 1627.6 | 1611.7 | 1588.7 | 1588.7 | 1585.1 |
| 25°    | 1579.9 | 1565.8 | 1535.9 | 1539.3 | 1535.9 |
| 27.5°  | 1526.9 | 1514.6 | 1491.8 | 1486.5 | 1477.7 |
| 30°    | 1474.1 | 1460.0 | 1433.6 | 1428.3 | 1421.3 |
| 32.5°  | 1417.7 | 1407.2 | 1378.9 | 1368.3 | 1361.2 |
| 35°    | 1363.0 | 1345.5 | 1317.2 | 1306.6 | 1297.8 |
| 37.5°  | 1301.3 | 1285.4 | 1257.2 | 1244.8 | 1236.0 |
| 40°    | 1237.9 | 1223.7 | 1195.4 | 1179.7 | 1172.6 |
| 42.5°  | 1176.2 | 1162.0 | 1133.9 | 1116.1 | 1105.6 |
| 45°    | 1109.2 | 1096.8 | 1070.3 | 1051.0 | 1043.9 |
| 47.5°  | 1043.9 | 1031.5 | 1003.3 | 983.8  | 973.4  |
| 50°    | 975.1  | 966.3  | 941.6  | 916.9  | 908.0  |
| 52.5°  | 908.0  | 895.7  | 872.9  | 853.5  | 841.1  |
| 55°    | 839.4  | 828.8  | 807.6  | 786.5  | 777.7  |
| 57.5°  | 770.5  | 761.8  | 738.8  | 717.7  | 710.5  |
| 60°    | 701.7  | 694.8  | 670.1  | 650.6  | 645.5  |
| 62.5°  | 634.8  | 622.5  | 604.8  | 587.2  | 580.1  |
| 65°    | 566.1  | 555.4  | 537.8  | 522.0  | 513.1  |
| 67.5°  | 495.6  | 486.6  | 470.9  | 458.5  | 451.4  |
| 70°    | 430.3  | 423.2  | 407.3  | 394.9  | 388.0  |
| 72.5°  | 363.4  | 356.2  | 347.4  | 335.1  | 329.8  |
| 75°    | 296.1  | 292.8  | 283.8  | 273.3  | 276.9  |
| 77.5°  | 236.3  | 229.1  | 225.6  | 220.4  | 215.2  |
| 80°    | 176.4  | 174.6  | 171.0  | 165.8  | 162.2  |
| 82.5°  | 119.9  | 119.9  | 118.2  | 111.1  | 111.1  |
| 85°    | 72.2   | 70.5   | 68.8   | 63.4   | 61.7   |
| 87.5°  | 31.8   | 28.3   | 24.7   | 19.4   | 17.6   |
| 90°    | 0.8    | 11.0   | 18.4   | 23.1   | 24.8   |
| 92.5°  | 23.1   | 19.3   | 22.1   | 23.9   | 24.8   |
| 95°    | 59.8   | 29.4   | 35.8   | 40.5   | 39.6   |
| 97.5°  | 107.7  | 32.2   | 46.9   | 49.8   | 50.6   |
| 100°   | 163.0  | 36.9   | 52.5   | 59.8   | 61.6   |
| 102.5° | 223.7  | 222.0  | 54.3   | 64.4   | 67.2   |
| 105°   | 279.8  | 307.6  | 56.2   | 66.3   | 69.9   |
| 107.5° | 345.3  | 368.3  | 58.1   | 68.1   | 71.8   |
| 110°   | 407.9  | 427.2  | 161.2  | 69.1   | 72.7   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 466.8  | 483.3  | 467.7  | 70.9   | 73.7   |
| 115°   | 529.3  | 545.0  | 568.1  | 141.8  | 75.6   |
| 117.5° | 583.7  | 602.1  | 617.8  | 486.1  | 244.9  |
| 120°   | 644.5  | 658.3  | 674.9  | 686.0  | 561.7  |
| 122.5° | 696.0  | 710.8  | 729.2  | 734.7  | 735.7  |
| 125°   | 748.5  | 760.5  | 778.0  | 784.5  | 787.2  |
| 127.5° | 796.4  | 809.3  | 823.1  | 832.4  | 833.2  |
| 130°   | 841.5  | 856.3  | 866.3  | 876.5  | 875.6  |
| 132.5° | 887.5  | 899.6  | 909.6  | 917.9  | 917.1  |
| 135°   | 926.2  | 941.0  | 949.2  | 958.5  | 956.7  |
| 137.5° | 966.7  | 977.7  | 987.0  | 996.2  | 993.4  |
| 140°   | 1006.3 | 1013.7 | 1023.8 | 1032.1 | 1027.5 |
| 142.5° | 1039.5 | 1045.9 | 1057.9 | 1065.2 | 1060.6 |
| 145°   | 1074.5 | 1073.6 | 1089.1 | 1095.6 | 1091.0 |
| 147.5° | 1104.8 | 1102.0 | 1117.7 | 1122.3 | 1118.7 |
| 150°   | 1134.3 | 1127.8 | 1142.6 | 1148.1 | 1143.5 |
| 152.5° | 1159.1 | 1151.8 | 1165.5 | 1171.1 | 1164.7 |
| 155°   | 1183.1 | 1174.9 | 1185.9 | 1191.4 | 1184.0 |
| 157.5° | 1202.4 | 1195.0 | 1203.4 | 1209.8 | 1202.4 |
| 160°   | 1219.0 | 1213.4 | 1219.0 | 1224.5 | 1218.0 |
| 162.5° | 1233.7 | 1228.2 | 1232.8 | 1239.3 | 1231.0 |
| 165°   | 1246.6 | 1241.1 | 1243.9 | 1250.3 | 1243.9 |
| 167.5° | 1256.8 | 1251.1 | 1254.1 | 1260.5 | 1252.2 |
| 170°   | 1265.1 | 1259.5 | 1261.3 | 1267.8 | 1259.5 |
| 172.5° | 1270.5 | 1265.1 | 1267.0 | 1273.4 | 1265.1 |
| 175°   | 1275.1 | 1268.7 | 1270.5 | 1277.0 | 1267.8 |
| 177.5° | 1277.0 | 1270.5 | 1271.5 | 1278.0 | 1269.7 |
| 180°   | 1272.4 | 1272.4 | 1272.4 | 1272.4 | 1272.4 |

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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 | 10.59            | 11.51 | 11.50 | 12.43 | 13.62 | 10.16          | 11.08 | 11.07 | 12.00 | 13.19 |
|                 | 3H   | 12.25            | 13.07 | 13.17 | 14.00 | 15.22 | 11.78          | 12.60 | 12.70 | 13.53 | 14.75 |
|                 | 4H   | 12.83            | 13.61 | 13.77 | 14.55 | 15.77 | 12.36          | 13.14 | 13.30 | 14.08 | 15.30 |
|                 | 6H   | 13.23            | 13.94 | 14.17 | 14.89 | 16.12 | 12.76          | 13.47 | 13.70 | 14.42 | 15.65 |
|                 | 8H   | 13.33            | 14.01 | 14.28 | 14.97 | 16.21 | 12.86          | 13.54 | 13.81 | 14.51 | 15.74 |
|                 | 12H  | 13.38            | 14.02 | 14.33 | 14.98 | 16.24 | 12.90          | 13.55 | 13.86 | 14.51 | 15.77 |
| 4H              | 2H   | 11.06            | 11.83 | 12.00 | 12.77 | 14.00 | 10.71          | 11.49 | 11.65 | 12.43 | 13.65 |
|                 | 3H   | 12.92            | 13.56 | 13.87 | 14.54 | 15.77 | 12.53          | 13.17 | 13.48 | 14.15 | 15.38 |
|                 | 4H   | 13.63            | 14.22 | 14.59 | 15.18 | 16.44 | 13.22          | 13.82 | 14.18 | 14.78 | 16.04 |
|                 | 6H   | 14.13            | 14.64 | 15.11 | 15.63 | 16.89 | 13.73          | 14.24 | 14.70 | 15.23 | 16.49 |
|                 | 8H   | 14.28            | 14.76 | 15.26 | 15.74 | 17.02 | 13.88          | 14.35 | 14.85 | 15.33 | 16.61 |
|                 | 12H  | 14.35            | 14.78 | 15.35 | 15.78 | 17.06 | 13.94          | 14.37 | 14.93 | 15.37 | 16.65 |
| 8H              | 4H   | 13.82            | 14.30 | 14.80 | 15.28 | 16.56 | 13.47          | 13.94 | 14.44 | 14.92 | 16.20 |
|                 | 6H   | 14.44            | 14.84 | 15.44 | 15.86 | 17.14 | 14.09          | 14.48 | 15.09 | 15.51 | 16.78 |
|                 | 8H   | 14.66            | 15.01 | 15.67 | 16.02 | 17.31 | 14.30          | 14.64 | 15.30 | 15.66 | 16.95 |
|                 | 12H  | 14.79            | 15.09 | 15.80 | 16.10 | 17.44 | 14.41          | 14.72 | 15.42 | 15.72 | 17.06 |
| 12H             | 4H   | 13.81            | 14.24 | 14.80 | 15.24 | 16.52 | 13.46          | 13.89 | 14.45 | 14.89 | 16.17 |
|                 | 6H   | 14.47            | 14.82 | 15.48 | 15.83 | 17.13 | 14.13          | 14.47 | 15.13 | 15.49 | 16.78 |
|                 | 8H   | 14.71            | 15.02 | 15.72 | 16.02 | 17.36 | 14.36          | 14.66 | 15.37 | 15.67 | 17.01 |

END OF REPORT