

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: P919576

Luminaire Tested: DFN2DIP-PN4F0-050D110US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919576  
REPORT IS A COMBINATION OF REPORTS P899737 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-050D110US935-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

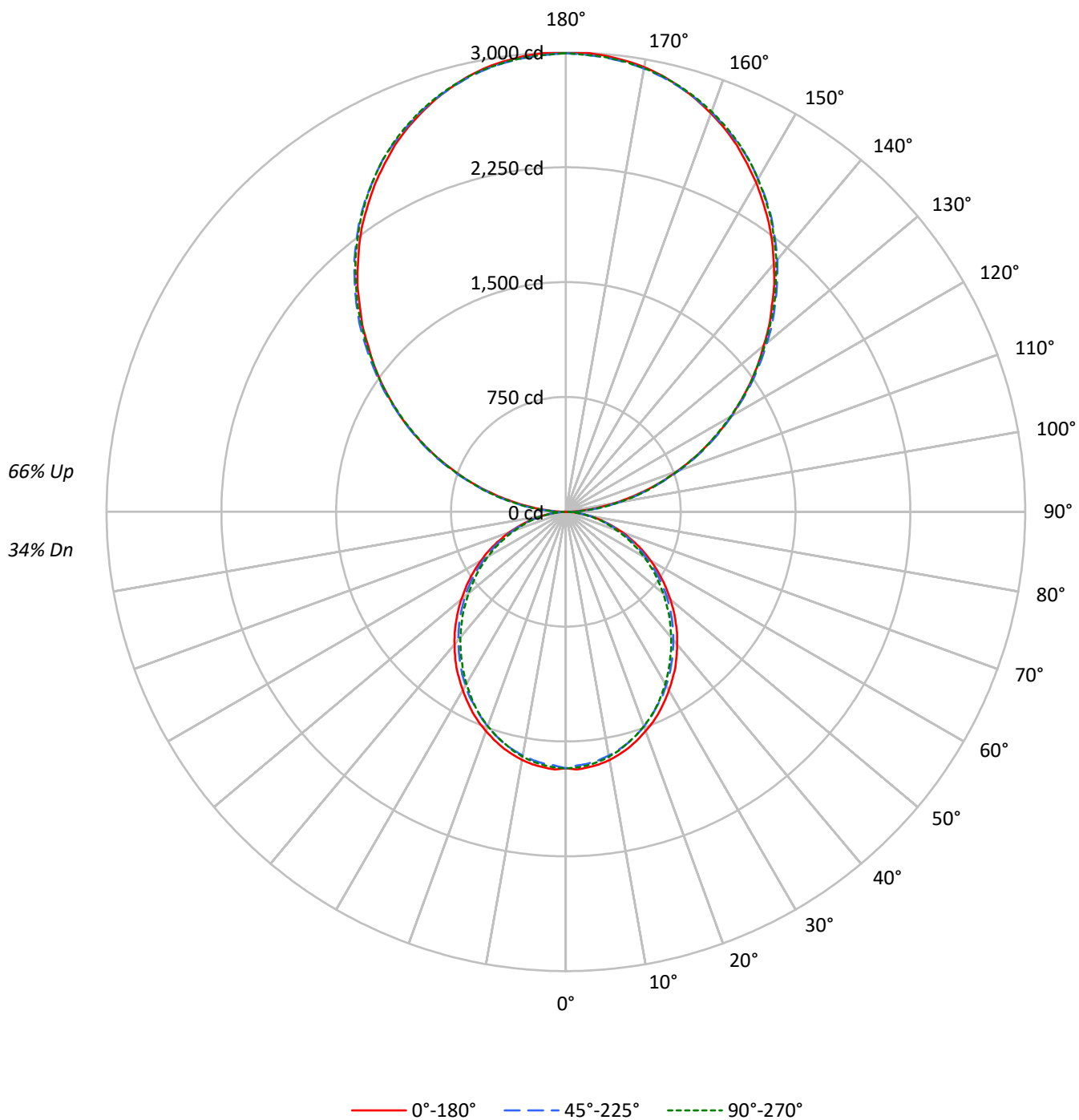
Lumens per Lamp: N/A  
Luminaire Lumens: 12643.8 lumens  
Efficiency: N/A  
Efficacy: 93.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 135.7  
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

TEST NUMBER: P919576

CATALOG NUMBER: DFN2DIP-PN4F0-050D110US935-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P919576

CATALOG NUMBER: DFN2DIP-PN4F0-050D110US935-FLLFL

**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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 57 | 57 | 57 | 41 | 41 | 41 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 49 | 47 | 36 | 36 | 35 |
| 2   | 86  | 78  | 73  | 67  | 77 | 71 | 66 | 62 | 57 | 53 | 50 | 44 | 42 | 40 | 32 | 31 | 29 |
| 3   | 78  | 69  | 62  | 56  | 70 | 62 | 56 | 51 | 50 | 46 | 42 | 39 | 36 | 33 | 28 | 26 | 25 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 49 | 44 | 45 | 40 | 36 | 35 | 31 | 29 | 25 | 23 | 21 |
| 5   | 65  | 54  | 46  | 40  | 59 | 49 | 42 | 37 | 40 | 35 | 31 | 31 | 27 | 25 | 23 | 20 | 19 |
| 6   | 60  | 48  | 41  | 35  | 54 | 44 | 37 | 32 | 36 | 31 | 27 | 28 | 24 | 22 | 21 | 18 | 16 |
| 7   | 56  | 44  | 36  | 31  | 50 | 40 | 33 | 28 | 32 | 27 | 24 | 25 | 22 | 19 | 19 | 16 | 15 |
| 8   | 52  | 40  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 14 | 12 |
| 10  | 45  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 15 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1223 | 1223 | 1223 |
| 5°  | 1225 | 1206 | 1214 |
| 10° | 1215 | 1190 | 1198 |
| 15° | 1197 | 1170 | 1172 |
| 20° | 1173 | 1143 | 1146 |
| 25° | 1149 | 1111 | 1116 |
| 30° | 1119 | 1081 | 1078 |
| 35° | 1090 | 1045 | 1037 |
| 40° | 1055 | 1009 | 998  |
| 45° | 1020 | 973  | 959  |
| 50° | 982  | 936  | 913  |
| 55° | 942  | 892  | 871  |
| 60° | 896  | 840  | 823  |
| 65° | 847  | 786  | 766  |
| 70° | 784  | 721  | 705  |
| 75° | 697  | 643  | 649  |
| 80° | 592  | 543  | 541  |
| 85° | 428  | 371  | 362  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2346 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 157.7   | 1.2       |
| 10°-20°   | 443.6   | 3.5       |
| 20°-30°   | 651.9   | 5.2       |
| 30°-40°   | 757.2   | 6.0       |
| 40°-50°   | 756.2   | 6.0       |
| 50°-60°   | 659.4   | 5.2       |
| 60°-70°   | 487.4   | 3.9       |
| 70°-80°   | 275.8   | 2.2       |
| 80°-90°   | 81.3    | 0.6       |
| 90°-100°  | 185.3   | 1.5       |
| 100°-110° | 588.9   | 4.7       |
| 110°-120° | 1007.8  | 8.0       |
| 120°-130° | 1325.4  | 10.5      |
| 130°-140° | 1487.7  | 11.8      |
| 140°-150° | 1458.9  | 11.5      |
| 150°-160° | 1223.8  | 9.7       |
| 160°-170° | 811.6   | 6.4       |
| 170°-180° | 283.7   | 2.2       |
| 0°-30°    | 1253.2  | 9.9       |
| 0°-40°    | 2010.3  | 15.9      |
| 0°-60°    | 3425.9  | 27.1      |
| 0°-90°    | 4270.5  | 33.8      |
| 90°-120°  | 1782.1  | 14.1      |
| 90°-150°  | 6054.2  | 47.9      |
| 90°-180°  | 8373.0  | 66.2      |
| 0°-180°   | 12643.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1675 | 1675  | 1675 | 1675  | 1675 |      |
| 5°   | 1675 | 1669  | 1651 | 1664  | 1661 | 159  |
| 15°  | 1595 | 1585  | 1564 | 1570  | 1562 | 449  |
| 25°  | 1443 | 1430  | 1403 | 1406  | 1403 | 664  |
| 35°  | 1245 | 1229  | 1203 | 1194  | 1186 | 778  |
| 45°  | 1013 | 1002  | 978  | 960   | 954  | 782  |
| 55°  | 767  | 757   | 738  | 718   | 710  | 686  |
| 65°  | 517  | 507   | 491  | 477   | 469  | 511  |
| 75°  | 270  | 267   | 259  | 250   | 253  | 289  |
| 85°  | 66   | 64    | 63   | 58    | 56   | 74   |
| 90°  | 3    | 32    | 88   | 83    | 86   | 12   |
| 95°  | 132  | 157   | 162  | 162   | 157  | 147  |
| 105° | 544  | 551   | 556  | 561   | 561  | 574  |
| 115° | 1011 | 1026  | 1021 | 1019  | 1011 | 1000 |
| 125° | 1471 | 1494  | 1486 | 1478  | 1476 | 1315 |
| 135° | 1903 | 1931  | 1936 | 1933  | 1926 | 1471 |
| 145° | 2310 | 2328  | 2342 | 2345  | 2335 | 1443 |
| 155° | 2641 | 2648  | 2657 | 2669  | 2661 | 1216 |
| 165° | 2873 | 2871  | 2871 | 2889  | 2876 | 811  |
| 175° | 2990 | 2983  | 2977 | 2995  | 2980 | 284  |
| 180° | 2995 | 2995  | 2995 | 2995  | 2995 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1675.1 | 1675.1 | 1675.1 | 1675.1 | 1675.1 |
| 2.5°   | 1684.8 | 1676.8 | 1659.1 | 1675.1 | 1672.1 |
| 5°     | 1675.1 | 1668.8 | 1651.0 | 1663.8 | 1660.8 |
| 7.5°   | 1663.8 | 1654.2 | 1636.5 | 1649.5 | 1646.2 |
| 10°    | 1646.2 | 1634.9 | 1615.7 | 1628.4 | 1623.7 |
| 12.5°  | 1621.9 | 1612.4 | 1593.1 | 1601.1 | 1597.8 |
| 15°    | 1594.6 | 1585.0 | 1564.0 | 1570.5 | 1562.5 |
| 17.5°  | 1560.7 | 1551.2 | 1530.2 | 1538.2 | 1530.2 |
| 20°    | 1523.7 | 1514.2 | 1491.6 | 1496.3 | 1490.0 |
| 22.5°  | 1486.8 | 1472.2 | 1451.2 | 1451.2 | 1447.9 |
| 25°    | 1443.2 | 1430.4 | 1403.0 | 1406.1 | 1403.0 |
| 27.5°  | 1394.8 | 1383.5 | 1362.7 | 1357.9 | 1349.9 |
| 30°    | 1346.6 | 1333.7 | 1309.6 | 1304.8 | 1298.3 |
| 32.5°  | 1295.0 | 1285.5 | 1259.6 | 1249.9 | 1243.5 |
| 35°    | 1245.1 | 1229.1 | 1203.2 | 1193.5 | 1185.5 |
| 37.5°  | 1188.7 | 1174.2 | 1148.4 | 1137.1 | 1129.1 |
| 40°    | 1130.8 | 1117.8 | 1092.0 | 1077.6 | 1071.2 |
| 42.5°  | 1074.4 | 1061.4 | 1035.8 | 1019.5 | 1010.0 |
| 45°    | 1013.2 | 1001.9 | 977.7  | 960.1  | 953.6  |
| 47.5°  | 953.6  | 942.3  | 916.5  | 898.7  | 889.2  |
| 50°    | 890.7  | 882.7  | 860.1  | 837.6  | 829.5  |
| 52.5°  | 829.5  | 818.2  | 797.4  | 779.6  | 768.4  |
| 55°    | 766.8  | 757.1  | 737.7  | 718.4  | 710.4  |
| 57.5°  | 703.9  | 695.9  | 674.9  | 655.6  | 649.0  |
| 60°    | 641.0  | 634.7  | 612.2  | 594.3  | 589.6  |
| 62.5°  | 579.9  | 568.6  | 552.5  | 536.4  | 529.9  |
| 65°    | 517.1  | 507.4  | 491.3  | 476.8  | 468.7  |
| 67.5°  | 452.7  | 444.5  | 430.2  | 418.9  | 412.3  |
| 70°    | 393.0  | 386.6  | 372.0  | 360.8  | 354.5  |
| 72.5°  | 331.9  | 325.4  | 317.4  | 306.1  | 301.3  |
| 75°    | 270.5  | 267.4  | 259.2  | 249.7  | 253.0  |
| 77.5°  | 215.9  | 209.3  | 206.1  | 201.3  | 196.6  |
| 80°    | 161.2  | 159.5  | 156.2  | 151.4  | 148.2  |
| 82.5°  | 109.5  | 109.5  | 108.0  | 101.5  | 101.5  |
| 85°    | 66.0   | 64.4   | 62.9   | 57.9   | 56.4   |
| 87.5°  | 29.0   | 25.8   | 22.6   | 17.7   | 16.1   |
| 90°    | 2.7    | 32.5   | 88.5   | 83.1   | 85.8   |
| 92.5°  | 56.0   | 75.9   | 78.5   | 81.3   | 81.3   |
| 95°    | 131.8  | 157.1  | 161.6  | 161.6  | 157.1  |
| 97.5°  | 219.5  | 242.9  | 252.9  | 252.9  | 252.9  |
| 100°   | 320.5  | 341.3  | 348.5  | 348.5  | 345.9  |
| 102.5° | 427.1  | 442.5  | 452.5  | 455.1  | 452.5  |
| 105°   | 543.6  | 550.9  | 556.3  | 560.8  | 560.8  |
| 107.5° | 659.2  | 670.0  | 670.0  | 671.8  | 659.2  |
| 110°   | 771.2  | 785.7  | 785.7  | 785.7  | 778.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 892.2  | 907.5  | 904.8  | 897.6  | 892.2  |
| 115°   | 1011.4 | 1025.8 | 1021.3 | 1018.6 | 1011.4 |
| 117.5° | 1129.7 | 1149.5 | 1136.9 | 1129.7 | 1122.5 |
| 120°   | 1248.9 | 1268.8 | 1248.9 | 1248.9 | 1240.8 |
| 122.5° | 1357.3 | 1382.5 | 1369.8 | 1362.6 | 1357.3 |
| 125°   | 1471.0 | 1493.6 | 1486.3 | 1478.2 | 1475.5 |
| 127.5° | 1582.1 | 1610.1 | 1600.2 | 1589.3 | 1582.1 |
| 130°   | 1685.9 | 1718.5 | 1713.9 | 1708.5 | 1698.6 |
| 132.5° | 1802.4 | 1827.7 | 1829.5 | 1816.9 | 1809.6 |
| 135°   | 1902.6 | 1930.6 | 1936.0 | 1933.4 | 1926.1 |
| 137.5° | 2014.6 | 2037.2 | 2041.7 | 2039.9 | 2029.1 |
| 140°   | 2113.1 | 2135.6 | 2148.3 | 2148.3 | 2138.4 |
| 142.5° | 2214.2 | 2236.8 | 2244.0 | 2246.7 | 2236.8 |
| 145°   | 2309.9 | 2328.0 | 2342.4 | 2345.1 | 2335.2 |
| 147.5° | 2395.7 | 2418.3 | 2429.1 | 2433.6 | 2423.7 |
| 150°   | 2484.2 | 2499.6 | 2509.5 | 2517.6 | 2509.5 |
| 152.5° | 2562.8 | 2578.1 | 2590.7 | 2600.7 | 2590.7 |
| 155°   | 2641.4 | 2648.5 | 2656.7 | 2669.4 | 2661.2 |
| 157.5° | 2709.0 | 2714.5 | 2718.9 | 2737.0 | 2724.4 |
| 160°   | 2769.6 | 2775.0 | 2777.7 | 2793.1 | 2782.2 |
| 162.5° | 2825.5 | 2825.5 | 2828.3 | 2845.4 | 2832.8 |
| 165°   | 2873.4 | 2870.7 | 2870.7 | 2888.7 | 2876.1 |
| 167.5° | 2916.7 | 2908.6 | 2908.6 | 2926.7 | 2914.0 |
| 170°   | 2949.3 | 2942.0 | 2939.4 | 2957.4 | 2942.0 |
| 172.5° | 2971.8 | 2964.6 | 2961.9 | 2980.0 | 2964.6 |
| 175°   | 2989.9 | 2982.7 | 2977.2 | 2995.3 | 2980.0 |
| 177.5° | 2999.8 | 2992.6 | 2987.1 | 3002.6 | 2987.1 |
| 180°   | 2995.3 | 2995.3 | 2995.3 | 2995.3 | 2995.3 |

TEST NUMBER: P919576

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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 | 6.25             | 6.98  | 7.34  | 8.07  | 9.55  | 5.81           | 6.54  | 6.90  | 7.63  | 9.11  |
|                 | 3H   | 7.91             | 8.56  | 9.00  | 9.65  | 11.16 | 7.42           | 8.08  | 8.51  | 9.17  | 10.67 |
|                 | 4H   | 8.49             | 9.11  | 9.59  | 10.21 | 11.71 | 8.00           | 8.62  | 9.11  | 9.72  | 11.23 |
|                 | 6H   | 8.88             | 9.46  | 10.00 | 10.55 | 12.08 | 8.39           | 8.97  | 9.51  | 10.06 | 11.58 |
|                 | 8H   | 8.99             | 9.53  | 10.10 | 10.64 | 12.16 | 8.49           | 9.04  | 9.61  | 10.15 | 11.67 |
|                 | 12H  | 9.03             | 9.55  | 10.15 | 10.66 | 12.19 | 8.53           | 9.05  | 9.65  | 10.16 | 11.69 |
| 4H              | 2H   | 6.70             | 7.32  | 7.81  | 8.41  | 9.92  | 6.35           | 6.97  | 7.46  | 8.06  | 9.57  |
|                 | 3H   | 8.55             | 9.07  | 9.67  | 10.20 | 11.72 | 8.15           | 8.67  | 9.27  | 9.79  | 11.31 |
|                 | 4H   | 9.27             | 9.74  | 10.39 | 10.85 | 12.40 | 8.85           | 9.33  | 9.97  | 10.44 | 11.98 |
|                 | 6H   | 9.78             | 10.19 | 10.91 | 11.32 | 12.85 | 9.35           | 9.76  | 10.48 | 10.90 | 12.43 |
|                 | 8H   | 9.92             | 10.31 | 11.05 | 11.43 | 12.98 | 9.50           | 9.88  | 10.62 | 11.00 | 12.55 |
|                 | 12H  | 9.99             | 10.34 | 11.14 | 11.48 | 13.03 | 9.55           | 9.90  | 10.70 | 11.04 | 12.59 |
| 8H              | 4H   | 9.45             | 9.83  | 10.58 | 10.96 | 12.51 | 9.08           | 9.46  | 10.21 | 10.59 | 12.14 |
|                 | 6H   | 10.08            | 10.40 | 11.23 | 11.56 | 13.11 | 9.71           | 10.02 | 10.86 | 11.19 | 12.74 |
|                 | 8H   | 10.30            | 10.58 | 11.46 | 11.73 | 13.29 | 9.92           | 10.19 | 11.07 | 11.34 | 12.91 |
|                 | 12H  | 10.43            | 10.67 | 11.59 | 11.82 | 13.42 | 10.03          | 10.27 | 11.19 | 11.42 | 13.02 |
| 12H             | 4H   | 9.43             | 9.78  | 10.58 | 10.92 | 12.47 | 9.07           | 9.42  | 10.22 | 10.55 | 12.11 |
|                 | 6H   | 10.11            | 10.39 | 11.27 | 11.53 | 13.10 | 9.75           | 10.02 | 10.90 | 11.17 | 12.74 |
|                 | 8H   | 10.35            | 10.59 | 11.51 | 11.73 | 13.34 | 9.98           | 10.22 | 11.14 | 11.36 | 12.96 |

END OF REPORT