

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: P907284

Luminaire Tested: DFN2DIP-TR4F0-040D070US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907284  
REPORT IS A COMBINATION OF REPORTS P900424 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-040D070US835-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

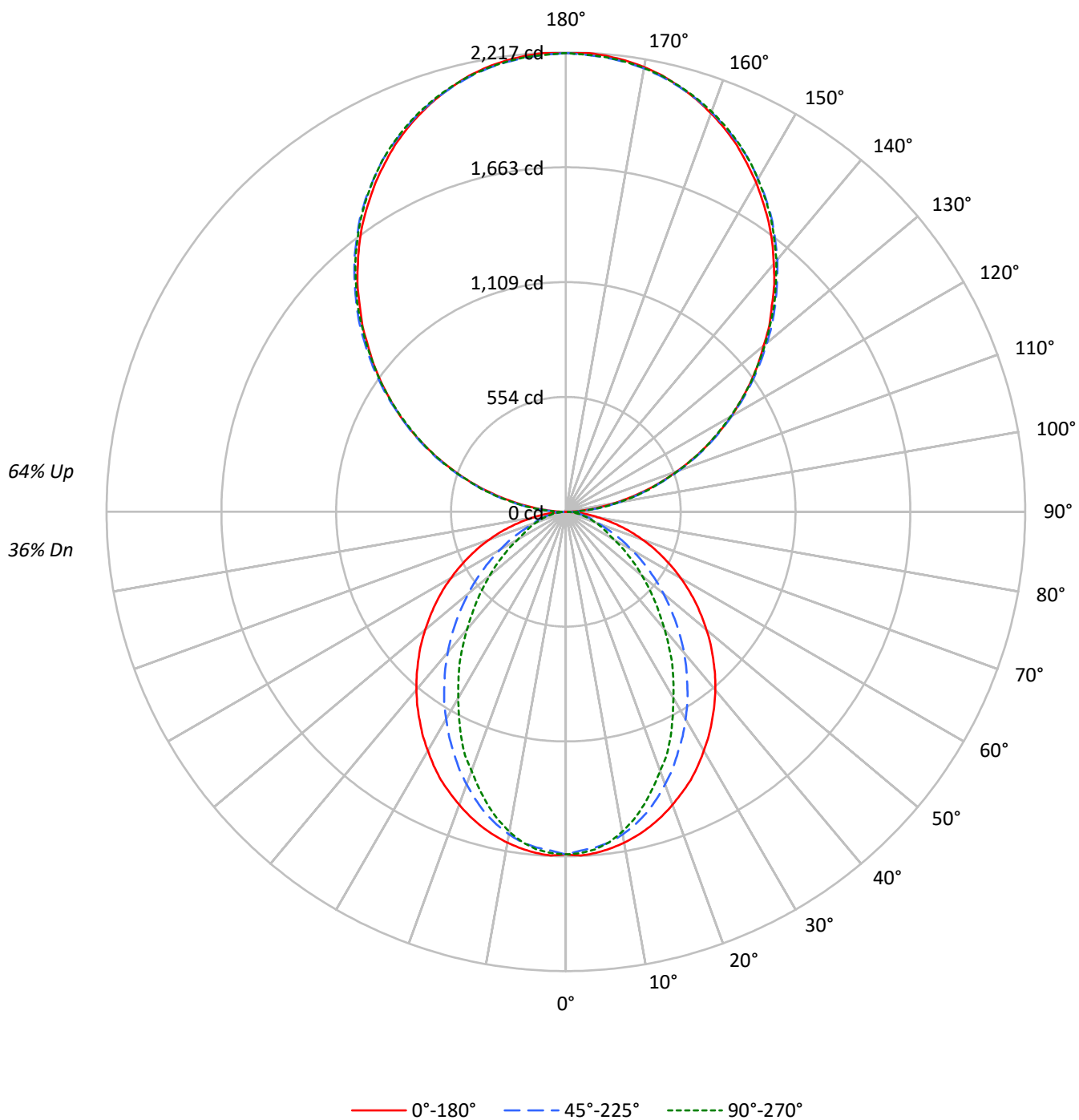
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9595.0 lumens  
Efficiency: N/A  
Efficacy: 114.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 84.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 75 | 75 | 75 | 58 | 58 | 58 | 43 | 43 | 43 |
| 1   | 95  | 91  | 87  | 84  | 86 | 82 | 79 | 76 | 66 | 64 | 62 | 52 | 50 | 49 | 38 | 37 | 37 |
| 2   | 87  | 80  | 74  | 69  | 78 | 72 | 67 | 63 | 59 | 55 | 52 | 46 | 44 | 42 | 34 | 33 | 31 |
| 3   | 79  | 70  | 63  | 58  | 71 | 64 | 58 | 53 | 52 | 48 | 44 | 41 | 38 | 36 | 31 | 29 | 27 |
| 4   | 73  | 62  | 55  | 49  | 65 | 57 | 50 | 45 | 46 | 42 | 38 | 37 | 33 | 31 | 27 | 25 | 24 |
| 5   | 67  | 56  | 48  | 42  | 60 | 51 | 44 | 39 | 42 | 37 | 33 | 33 | 29 | 27 | 25 | 23 | 21 |
| 6   | 61  | 50  | 42  | 37  | 55 | 46 | 39 | 34 | 37 | 32 | 29 | 30 | 26 | 24 | 23 | 20 | 18 |
| 7   | 57  | 45  | 37  | 32  | 51 | 41 | 35 | 30 | 34 | 29 | 25 | 27 | 24 | 21 | 21 | 18 | 17 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 31 | 26 | 23 | 25 | 21 | 19 | 19 | 17 | 15 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 28 | 24 | 28 | 24 | 20 | 23 | 19 | 17 | 18 | 15 | 14 |
| 10  | 46  | 34  | 27  | 23  | 42 | 31 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 15 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1313 | 1313 | 1313 |
| 5°  | 1315 | 1292 | 1301 |
| 10° | 1302 | 1267 | 1258 |
| 15° | 1285 | 1225 | 1193 |
| 20° | 1261 | 1167 | 1113 |
| 25° | 1237 | 1103 | 1035 |
| 30° | 1204 | 1036 | 937  |
| 35° | 1172 | 965  | 850  |
| 40° | 1140 | 891  | 751  |
| 45° | 1102 | 809  | 661  |
| 50° | 1063 | 727  | 574  |
| 55° | 1022 | 638  | 489  |
| 60° | 975  | 546  | 403  |
| 65° | 920  | 452  | 362  |
| 70° | 855  | 364  | 328  |
| 75° | 772  | 321  | 298  |
| 80° | 652  | 269  | 259  |
| 85° | 455  | 180  | 194  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1725 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 154.9  | 1.6       |
| 10°-20°   | 425.3  | 4.4       |
| 20°-30°   | 597.2  | 6.2       |
| 30°-40°   | 650.9  | 6.8       |
| 40°-50°   | 598.3  | 6.2       |
| 50°-60°   | 469.9  | 4.9       |
| 60°-70°   | 305.8  | 3.2       |
| 70°-80°   | 157.4  | 1.6       |
| 80°-90°   | 46.5   | 0.5       |
| 90°-100°  | 137.0  | 1.4       |
| 100°-110° | 435.3  | 4.5       |
| 110°-120° | 744.9  | 7.8       |
| 120°-130° | 979.6  | 10.2      |
| 130°-140° | 1099.6 | 11.5      |
| 140°-150° | 1078.3 | 11.2      |
| 150°-160° | 904.5  | 9.4       |
| 160°-170° | 599.9  | 6.3       |
| 170°-180° | 209.7  | 2.2       |
| 0°-30°    | 1177.4 | 12.3      |
| 0°-40°    | 1828.4 | 19.1      |
| 0°-60°    | 2896.5 | 30.2      |
| 0°-90°    | 3406.3 | 35.5      |
| 90°-120°  | 1317.2 | 13.7      |
| 90°-150°  | 4474.7 | 46.6      |
| 90°-180°  | 6189.0 | 64.5      |
| 0°-180°   | 9595.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1653 | 1653  | 1653 | 1653  | 1653 |      |
| 5°   | 1653 | 1646  | 1626 | 1640  | 1635 | 157  |
| 15°  | 1572 | 1556  | 1505 | 1477  | 1462 | 443  |
| 25°  | 1427 | 1379  | 1281 | 1219  | 1197 | 656  |
| 35°  | 1230 | 1154  | 1022 | 928   | 895  | 770  |
| 45°  | 1005 | 905   | 748  | 642   | 606  | 776  |
| 55°  | 764  | 648   | 486  | 396   | 368  | 683  |
| 65°  | 516  | 395   | 260  | 210   | 205  | 512  |
| 75°  | 275  | 170   | 120  | 109   | 108  | 291  |
| 85°  | 64   | 33    | 28   | 28    | 28   | 74   |
| 90°  | 2    | 24    | 65   | 61    | 63   | 10   |
| 95°  | 97   | 116   | 120  | 120   | 116  | 108  |
| 105° | 402  | 407   | 411  | 414   | 414  | 424  |
| 115° | 748  | 758   | 755  | 753   | 748  | 739  |
| 125° | 1087 | 1104  | 1099 | 1093  | 1091 | 972  |
| 135° | 1406 | 1427  | 1431 | 1429  | 1424 | 1087 |
| 145° | 1707 | 1721  | 1731 | 1733  | 1726 | 1067 |
| 155° | 1952 | 1958  | 1964 | 1973  | 1967 | 899  |
| 165° | 2124 | 2122  | 2122 | 2135  | 2126 | 599  |
| 175° | 2210 | 2204  | 2200 | 2214  | 2202 | 210  |
| 180° | 2214 | 2214  | 2214 | 2214  | 2214 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1653.2 | 1653.2 | 1653.2 | 1653.2 | 1653.2 |
| 2.5°   | 1660.7 | 1653.2 | 1636.7 | 1651.8 | 1648.7 |
| 5°     | 1653.2 | 1645.7 | 1626.2 | 1639.7 | 1635.3 |
| 7.5°   | 1639.7 | 1630.8 | 1609.9 | 1615.7 | 1608.3 |
| 10°    | 1621.8 | 1611.3 | 1581.4 | 1576.8 | 1568.0 |
| 12.5°  | 1599.4 | 1585.9 | 1545.4 | 1536.5 | 1520.0 |
| 15°    | 1572.4 | 1555.9 | 1505.1 | 1476.7 | 1461.8 |
| 17.5°  | 1541.0 | 1517.0 | 1454.1 | 1421.3 | 1397.3 |
| 20°    | 1505.1 | 1475.1 | 1400.3 | 1363.0 | 1330.0 |
| 22.5°  | 1466.2 | 1431.8 | 1344.9 | 1294.1 | 1271.8 |
| 25°    | 1427.3 | 1379.4 | 1280.6 | 1219.4 | 1196.8 |
| 27.5°  | 1381.0 | 1330.0 | 1220.8 | 1150.5 | 1116.0 |
| 30°    | 1331.6 | 1274.6 | 1154.9 | 1078.7 | 1038.3 |
| 32.5°  | 1283.7 | 1214.8 | 1092.2 | 1002.4 | 964.9  |
| 35°    | 1229.9 | 1153.5 | 1021.9 | 927.6  | 894.6  |
| 37.5°  | 1177.5 | 1095.1 | 956.0  | 852.7  | 815.4  |
| 40°    | 1122.1 | 1032.4 | 887.2  | 781.0  | 742.1  |
| 42.5°  | 1065.2 | 969.5  | 818.4  | 707.6  | 670.3  |
| 45°    | 1005.4 | 905.1  | 748.1  | 641.8  | 605.9  |
| 47.5°  | 948.6  | 842.4  | 680.8  | 574.5  | 541.6  |
| 50°    | 885.7  | 779.5  | 614.9  | 511.6  | 480.3  |
| 52.5°  | 824.3  | 712.1  | 552.1  | 453.3  | 424.9  |
| 55°    | 764.5  | 647.8  | 486.2  | 396.5  | 368.1  |
| 57.5°  | 703.2  | 583.5  | 427.9  | 344.1  | 320.2  |
| 60°    | 640.3  | 520.6  | 366.5  | 290.3  | 266.4  |
| 62.5°  | 579.1  | 459.4  | 314.1  | 242.4  | 230.5  |
| 65°    | 516.2  | 394.9  | 260.3  | 209.5  | 204.9  |
| 67.5°  | 456.4  | 335.1  | 209.5  | 184.0  | 179.5  |
| 70°    | 393.5  | 276.8  | 173.5  | 158.6  | 152.5  |
| 72.5°  | 333.7  | 222.9  | 145.1  | 133.2  | 130.2  |
| 75°    | 275.2  | 170.5  | 119.7  | 109.2  | 107.8  |
| 77.5°  | 217.0  | 121.1  | 94.3   | 88.3   | 85.2   |
| 80°    | 163.0  | 86.8   | 71.7   | 65.9   | 65.9   |
| 82.5°  | 113.7  | 58.4   | 49.4   | 46.3   | 46.3   |
| 85°    | 64.3   | 32.9   | 28.4   | 28.4   | 28.4   |
| 87.5°  | 24.0   | 11.9   | 11.9   | 10.5   | 10.5   |
| 90°    | 2.0    | 24.0   | 65.4   | 61.4   | 63.4   |
| 92.5°  | 41.4   | 56.1   | 58.1   | 60.1   | 60.1   |
| 95°    | 97.4   | 116.1  | 119.5  | 119.5  | 116.1  |
| 97.5°  | 162.2  | 179.5  | 186.9  | 186.9  | 186.9  |
| 100°   | 236.9  | 252.3  | 257.6  | 257.6  | 255.6  |
| 102.5° | 315.7  | 327.0  | 334.4  | 336.4  | 334.4  |
| 105°   | 401.8  | 407.1  | 411.1  | 414.5  | 414.5  |
| 107.5° | 487.2  | 495.2  | 495.2  | 496.6  | 487.2  |
| 110°   | 570.0  | 580.7  | 580.7  | 580.7  | 575.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 659.4  | 670.8  | 668.8  | 663.4  | 659.4  |
| 115°   | 747.5  | 758.2  | 754.9  | 752.9  | 747.5  |
| 117.5° | 834.9  | 849.6  | 840.3  | 834.9  | 829.6  |
| 120°   | 923.0  | 937.7  | 923.0  | 923.0  | 917.0  |
| 122.5° | 1003.1 | 1021.8 | 1012.5 | 1007.1 | 1003.1 |
| 125°   | 1087.2 | 1103.9 | 1098.6 | 1092.6 | 1090.6 |
| 127.5° | 1169.3 | 1190.0 | 1182.7 | 1174.7 | 1169.3 |
| 130°   | 1246.1 | 1270.1 | 1266.8 | 1262.8 | 1255.4 |
| 132.5° | 1332.2 | 1350.9 | 1352.2 | 1342.9 | 1337.5 |
| 135°   | 1406.3 | 1426.9 | 1431.0 | 1428.9 | 1423.6 |
| 137.5° | 1489.0 | 1505.7 | 1509.0 | 1507.7 | 1499.7 |
| 140°   | 1561.8 | 1578.5 | 1587.8 | 1587.8 | 1580.5 |
| 142.5° | 1636.5 | 1653.2 | 1658.5 | 1660.5 | 1653.2 |
| 145°   | 1707.3 | 1720.6 | 1731.3 | 1733.3 | 1726.0 |
| 147.5° | 1770.7 | 1787.4 | 1795.4 | 1798.7 | 1791.4 |
| 150°   | 1836.1 | 1847.4 | 1854.8 | 1860.8 | 1854.8 |
| 152.5° | 1894.1 | 1905.5 | 1914.8 | 1922.2 | 1914.8 |
| 155°   | 1952.2 | 1957.5 | 1963.6 | 1972.9 | 1966.9 |
| 157.5° | 2002.3 | 2006.3 | 2009.6 | 2023.0 | 2013.6 |
| 160°   | 2047.0 | 2051.0 | 2053.0 | 2064.3 | 2056.3 |
| 162.5° | 2088.4 | 2088.4 | 2090.4 | 2103.0 | 2093.7 |
| 165°   | 2123.7 | 2121.7 | 2121.7 | 2135.1 | 2125.7 |
| 167.5° | 2155.8 | 2149.8 | 2149.8 | 2163.1 | 2153.8 |
| 170°   | 2179.8 | 2174.5 | 2172.5 | 2185.8 | 2174.5 |
| 172.5° | 2196.5 | 2191.1 | 2189.1 | 2202.5 | 2191.1 |
| 175°   | 2209.8 | 2204.5 | 2200.5 | 2213.8 | 2202.5 |
| 177.5° | 2217.2 | 2211.8 | 2207.8 | 2219.2 | 2207.8 |
| 180°   | 2213.8 | 2213.8 | 2213.8 | 2213.8 | 2213.8 |

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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 | 6.56             | 7.28  | 7.64  | 8.36  | 9.83  | 2.53           | 3.26 | 3.61 | 4.33 | 5.80 |
|                 | 3H   | 8.23             | 8.88  | 9.32  | 9.96  | 11.44 | 3.71           | 4.36 | 4.80 | 5.45 | 6.93 |
|                 | 4H   | 8.83             | 9.45  | 9.93  | 10.53 | 12.02 | 4.16           | 4.77 | 5.26 | 5.86 | 7.35 |
|                 | 6H   | 9.25             | 9.81  | 10.35 | 10.90 | 12.40 | 4.48           | 5.04 | 5.58 | 6.13 | 7.63 |
|                 | 8H   | 9.37             | 9.91  | 10.48 | 11.01 | 12.51 | 4.56           | 5.10 | 5.68 | 6.21 | 7.70 |
|                 | 12H  | 9.43             | 9.94  | 10.54 | 11.04 | 12.56 | 4.61           | 5.11 | 5.72 | 6.21 | 7.73 |
| 4H              | 2H   | 6.56             | 7.18  | 7.67  | 8.26  | 9.75  | 3.11           | 3.73 | 4.22 | 4.81 | 6.30 |
|                 | 3H   | 8.38             | 8.89  | 9.50  | 10.01 | 11.51 | 4.46           | 4.97 | 5.57 | 6.08 | 7.58 |
|                 | 4H   | 9.07             | 9.54  | 10.19 | 10.64 | 12.17 | 5.00           | 5.47 | 6.12 | 6.57 | 8.09 |
|                 | 6H   | 9.58             | 9.98  | 10.70 | 11.11 | 12.62 | 5.42           | 5.82 | 6.54 | 6.94 | 8.46 |
|                 | 8H   | 9.75             | 10.13 | 10.88 | 11.25 | 12.78 | 5.54           | 5.92 | 6.66 | 7.03 | 8.57 |
|                 | 12H  | 9.84             | 10.18 | 10.98 | 11.31 | 12.85 | 5.60           | 5.94 | 6.74 | 7.07 | 8.61 |
| 8H              | 4H   | 9.03             | 9.41  | 10.15 | 10.52 | 12.06 | 5.27           | 5.65 | 6.40 | 6.76 | 8.30 |
|                 | 6H   | 9.59             | 9.90  | 10.74 | 11.06 | 12.59 | 5.79           | 6.10 | 6.93 | 7.26 | 8.79 |
|                 | 8H   | 9.81             | 10.08 | 10.96 | 11.22 | 12.77 | 5.98           | 6.25 | 7.13 | 7.39 | 8.94 |
|                 | 12H  | 9.94             | 10.18 | 11.10 | 11.32 | 12.90 | 6.10           | 6.33 | 7.25 | 7.47 | 9.05 |
| 12H             | 4H   | 8.98             | 9.32  | 10.12 | 10.45 | 11.98 | 5.27           | 5.61 | 6.41 | 6.74 | 8.28 |
|                 | 6H   | 9.57             | 9.84  | 10.72 | 10.98 | 12.53 | 5.84           | 6.11 | 6.99 | 7.25 | 8.80 |
|                 | 8H   | 9.79             | 10.02 | 10.94 | 11.16 | 12.74 | 6.04           | 6.28 | 7.20 | 7.42 | 9.00 |

END OF REPORT