

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: P918077

Luminaire Tested: DFN2DIP-TR3F0-050D090US930-RLFL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918077  
REPORT IS A COMBINATION OF REPORTS P900360 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-050D090US930-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

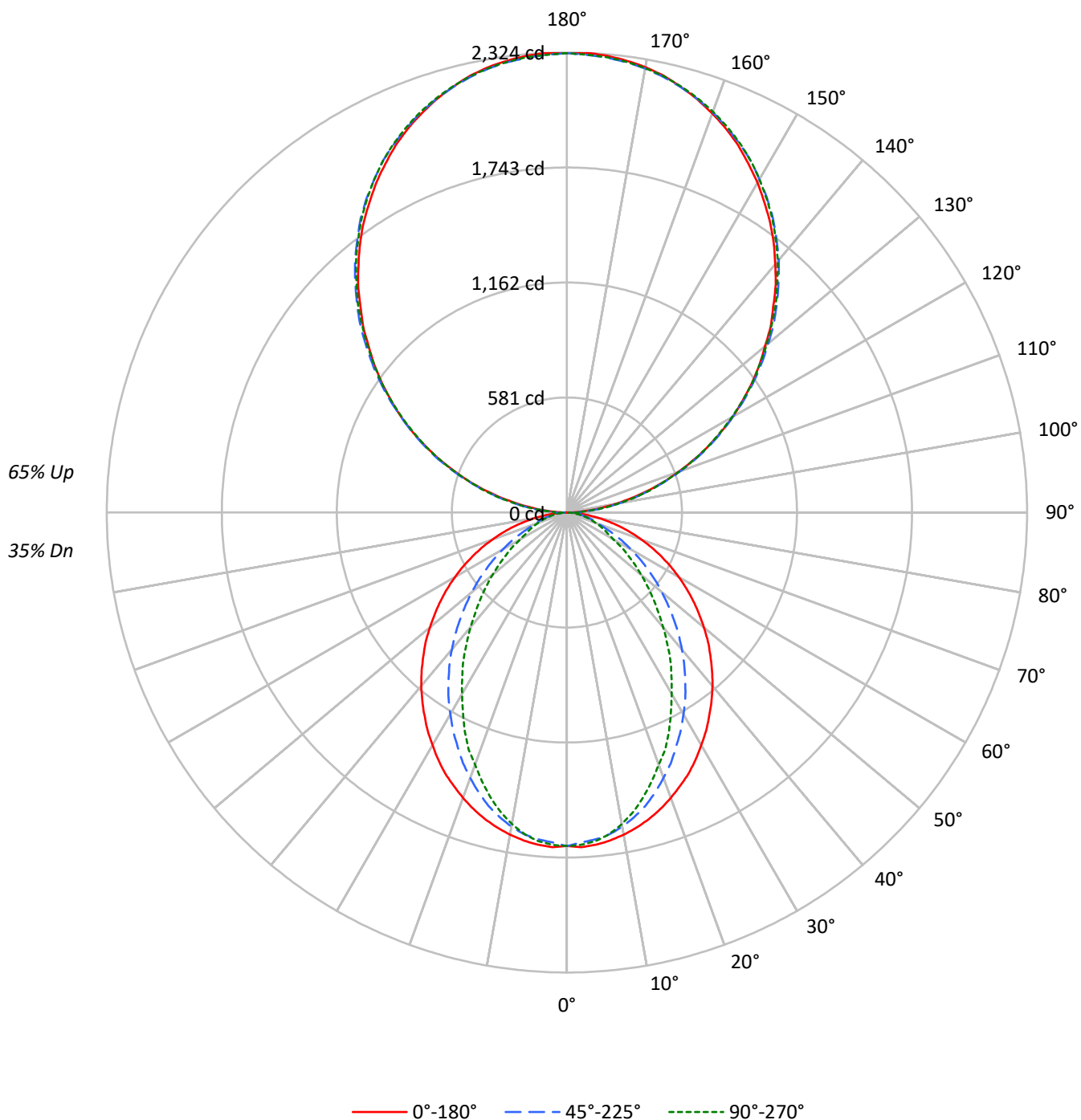
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9958.8 lumens  
Efficiency: N/A  
Efficacy: 85.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 116.3  
Input Voltage (V):  
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

TEST NUMBER: P918077

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### Luminous Intensity Polar Plot



TEST NUMBER: P918077

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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 | 42 | 42 | 42 |
| 1   | 95  | 91  | 87  | 84  | 85 | 82 | 79 | 76 | 66 | 64 | 62 | 51 | 50 | 49 | 38 | 37 | 36 |
| 2   | 86  | 79  | 74  | 69  | 78 | 72 | 67 | 63 | 58 | 55 | 52 | 45 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 70  | 63  | 58  | 71 | 64 | 58 | 53 | 52 | 47 | 44 | 40 | 38 | 35 | 30 | 28 | 27 |
| 4   | 72  | 62  | 55  | 49  | 65 | 57 | 50 | 45 | 46 | 41 | 38 | 36 | 33 | 30 | 27 | 25 | 23 |
| 5   | 67  | 55  | 48  | 42  | 60 | 51 | 44 | 39 | 41 | 36 | 33 | 33 | 29 | 26 | 25 | 22 | 21 |
| 6   | 61  | 50  | 42  | 37  | 55 | 45 | 39 | 34 | 37 | 32 | 29 | 30 | 26 | 23 | 22 | 20 | 18 |
| 7   | 57  | 45  | 37  | 32  | 51 | 41 | 34 | 30 | 34 | 29 | 25 | 27 | 23 | 21 | 21 | 18 | 16 |
| 8   | 53  | 41  | 33  | 28  | 48 | 37 | 31 | 26 | 31 | 26 | 22 | 25 | 21 | 19 | 19 | 16 | 15 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 28 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 17 | 15 | 13 |
| 10  | 46  | 34  | 27  | 23  | 41 | 31 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 15 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2099 | 2099 | 2099 |
| 5°  | 2102 | 2064 | 2078 |
| 10° | 2080 | 2022 | 2009 |
| 15° | 2050 | 1954 | 1903 |
| 20° | 2011 | 1860 | 1774 |
| 25° | 1971 | 1755 | 1649 |
| 30° | 1918 | 1648 | 1491 |
| 35° | 1865 | 1533 | 1352 |
| 40° | 1812 | 1413 | 1194 |
| 45° | 1750 | 1282 | 1050 |
| 50° | 1686 | 1149 | 909  |
| 55° | 1619 | 1007 | 774  |
| 60° | 1542 | 859  | 636  |
| 65° | 1452 | 709  | 571  |
| 70° | 1344 | 569  | 515  |
| 75° | 1208 | 498  | 465  |
| 80° | 1011 | 412  | 399  |
| 85° | 688  | 266  | 291  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2263 cd/sqm

TEST NUMBER: P918077

CATALOG NUMBER: DFN2DIP-TR3F0-050D090US930-RLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 157.9  | 1.6       |
| 10°-20°   | 433.5  | 4.4       |
| 20°-30°   | 608.6  | 6.1       |
| 30°-40°   | 663.4  | 6.7       |
| 40°-50°   | 609.7  | 6.1       |
| 50°-60°   | 478.8  | 4.8       |
| 60°-70°   | 311.7  | 3.1       |
| 70°-80°   | 160.4  | 1.6       |
| 80°-90°   | 47.5   | 0.5       |
| 90°-100°  | 143.6  | 1.4       |
| 100°-110° | 456.3  | 4.6       |
| 110°-120° | 780.8  | 7.8       |
| 120°-130° | 1026.9 | 10.3      |
| 130°-140° | 1152.6 | 11.6      |
| 140°-150° | 1130.3 | 11.3      |
| 150°-160° | 948.2  | 9.5       |
| 160°-170° | 628.8  | 6.3       |
| 170°-180° | 219.8  | 2.2       |
| 0°-30°    | 1200.0 | 12.0      |
| 0°-40°    | 1863.4 | 18.7      |
| 0°-60°    | 2951.9 | 29.6      |
| 0°-90°    | 3471.6 | 34.9      |
| 90°-120°  | 1380.7 | 13.9      |
| 90°-150°  | 4690.5 | 47.1      |
| 90°-180°  | 6487.0 | 65.1      |
| 0°-180°   | 9958.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1685 | 1685  | 1685 | 1685  | 1685 |      |
| 5°   | 1685 | 1677  | 1657 | 1671  | 1667 | 160  |
| 15°  | 1602 | 1586  | 1534 | 1505  | 1490 | 452  |
| 25°  | 1455 | 1406  | 1305 | 1243  | 1220 | 669  |
| 35°  | 1253 | 1176  | 1042 | 945   | 912  | 784  |
| 45°  | 1025 | 922   | 762  | 654   | 617  | 791  |
| 55°  | 779  | 660   | 496  | 404   | 375  | 696  |
| 65°  | 526  | 402   | 265  | 214   | 209  | 521  |
| 75°  | 280  | 174   | 122  | 111   | 110  | 297  |
| 85°  | 66   | 34    | 29   | 29    | 29   | 75   |
| 90°  | 2    | 25    | 69   | 64    | 66   | 10   |
| 95°  | 102  | 122   | 125  | 125   | 122  | 114  |
| 105° | 421  | 427   | 431  | 434   | 434  | 444  |
| 115° | 784  | 795   | 791  | 789   | 784  | 775  |
| 125° | 1140 | 1157  | 1152 | 1145  | 1143 | 1018 |
| 135° | 1474 | 1496  | 1500 | 1498  | 1492 | 1139 |
| 145° | 1790 | 1804  | 1815 | 1817  | 1809 | 1118 |
| 155° | 2046 | 2052  | 2058 | 2068  | 2062 | 942  |
| 165° | 2226 | 2224  | 2224 | 2238  | 2228 | 628  |
| 175° | 2316 | 2311  | 2307 | 2321  | 2309 | 220  |
| 180° | 2321 | 2321  | 2321 | 2321  | 2321 |      |

TEST NUMBER: P918077

CATALOG NUMBER: DFN2DIP-TR3F0-050D090US930-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1684.8 | 1684.8 | 1684.8 | 1684.8 | 1684.8 |
| 2.5°   | 1692.4 | 1684.8 | 1668.0 | 1683.3 | 1680.2 |
| 5°     | 1684.8 | 1677.2 | 1657.3 | 1671.0 | 1666.6 |
| 7.5°   | 1671.0 | 1662.0 | 1640.6 | 1646.7 | 1639.0 |
| 10°    | 1652.8 | 1642.1 | 1611.7 | 1607.0 | 1597.9 |
| 12.5°  | 1629.9 | 1616.2 | 1575.0 | 1565.9 | 1549.1 |
| 15°    | 1602.5 | 1585.7 | 1533.9 | 1505.0 | 1489.7 |
| 17.5°  | 1570.4 | 1546.1 | 1482.0 | 1448.5 | 1424.0 |
| 20°    | 1533.9 | 1503.3 | 1427.1 | 1389.1 | 1355.4 |
| 22.5°  | 1494.3 | 1459.1 | 1370.7 | 1318.9 | 1296.1 |
| 25°    | 1454.6 | 1405.7 | 1305.1 | 1242.7 | 1219.7 |
| 27.5°  | 1407.4 | 1355.4 | 1244.1 | 1172.5 | 1137.4 |
| 30°    | 1357.1 | 1299.0 | 1177.0 | 1099.3 | 1058.1 |
| 32.5°  | 1308.2 | 1238.0 | 1113.1 | 1021.6 | 983.4  |
| 35°    | 1253.4 | 1175.6 | 1041.5 | 945.3  | 911.7  |
| 37.5°  | 1200.0 | 1116.1 | 974.4  | 869.0  | 831.0  |
| 40°    | 1143.5 | 1052.1 | 904.1  | 795.9  | 756.3  |
| 42.5°  | 1085.7 | 988.1  | 834.1  | 721.1  | 683.1  |
| 45°    | 1024.7 | 922.4  | 762.4  | 654.0  | 617.4  |
| 47.5°  | 966.7  | 858.5  | 693.8  | 585.5  | 552.0  |
| 50°    | 902.7  | 794.4  | 626.7  | 521.4  | 489.5  |
| 52.5°  | 840.1  | 725.7  | 562.6  | 462.0  | 433.1  |
| 55°    | 779.1  | 660.1  | 495.5  | 404.1  | 375.1  |
| 57.5°  | 716.6  | 594.7  | 436.1  | 350.7  | 326.3  |
| 60°    | 652.6  | 530.6  | 373.5  | 295.9  | 271.4  |
| 62.5°  | 590.1  | 468.1  | 320.2  | 247.0  | 234.9  |
| 65°    | 526.0  | 402.5  | 265.3  | 213.5  | 208.9  |
| 67.5°  | 465.0  | 341.5  | 213.5  | 187.5  | 183.0  |
| 70°    | 401.0  | 282.1  | 176.8  | 161.6  | 155.5  |
| 72.5°  | 340.1  | 227.1  | 147.9  | 135.7  | 132.6  |
| 75°    | 280.5  | 173.7  | 122.0  | 111.3  | 109.8  |
| 77.5°  | 221.1  | 123.4  | 96.1   | 89.9   | 86.8   |
| 80°    | 166.2  | 88.5   | 73.1   | 67.1   | 67.1   |
| 82.5°  | 115.9  | 59.5   | 50.3   | 47.2   | 47.2   |
| 85°    | 65.5   | 33.5   | 28.9   | 28.9   | 28.9   |
| 87.5°  | 24.5   | 12.1   | 12.1   | 10.7   | 10.7   |
| 90°    | 2.1    | 25.2   | 68.6   | 64.3   | 66.4   |
| 92.5°  | 43.4   | 58.8   | 60.9   | 62.9   | 62.9   |
| 95°    | 102.2  | 121.7  | 125.2  | 125.2  | 121.7  |
| 97.5°  | 170.0  | 188.2  | 195.9  | 195.9  | 195.9  |
| 100°   | 248.3  | 264.5  | 270.0  | 270.0  | 268.0  |
| 102.5° | 330.9  | 342.8  | 350.5  | 352.6  | 350.5  |
| 105°   | 421.2  | 426.7  | 431.0  | 434.5  | 434.5  |
| 107.5° | 510.7  | 519.1  | 519.1  | 520.5  | 510.7  |
| 110°   | 597.5  | 608.7  | 608.7  | 608.7  | 603.1  |

TEST NUMBER: P918077

CATALOG NUMBER: DFN2DIP-TR3F0-050D090US930-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 691.2  | 703.1  | 701.0  | 695.4  | 691.2  |
| 115°   | 783.6  | 794.8  | 791.2  | 789.2  | 783.6  |
| 117.5° | 875.2  | 890.6  | 880.8  | 875.2  | 869.6  |
| 120°   | 967.6  | 982.9  | 967.6  | 967.6  | 961.2  |
| 122.5° | 1051.5 | 1071.1 | 1061.4 | 1055.7 | 1051.5 |
| 125°   | 1139.7 | 1157.2 | 1151.6 | 1145.2 | 1143.2 |
| 127.5° | 1225.7 | 1247.4 | 1239.7 | 1231.3 | 1225.7 |
| 130°   | 1306.2 | 1331.4 | 1327.9 | 1323.6 | 1316.0 |
| 132.5° | 1396.4 | 1416.0 | 1417.4 | 1407.6 | 1402.1 |
| 135°   | 1474.1 | 1495.7 | 1500.0 | 1497.9 | 1492.3 |
| 137.5° | 1560.8 | 1578.3 | 1581.8 | 1580.5 | 1572.1 |
| 140°   | 1637.1 | 1654.6 | 1664.3 | 1664.3 | 1656.7 |
| 142.5° | 1715.5 | 1732.9 | 1738.5 | 1740.7 | 1732.9 |
| 145°   | 1789.7 | 1803.6 | 1814.8 | 1816.9 | 1809.2 |
| 147.5° | 1856.1 | 1873.6 | 1882.0 | 1885.5 | 1877.8 |
| 150°   | 1924.7 | 1936.6 | 1944.2 | 1950.5 | 1944.2 |
| 152.5° | 1985.5 | 1997.4 | 2007.2 | 2014.9 | 2007.2 |
| 155°   | 2046.4 | 2051.9 | 2058.3 | 2068.1 | 2061.8 |
| 157.5° | 2098.8 | 2103.1 | 2106.6 | 2120.5 | 2110.7 |
| 160°   | 2145.7 | 2149.9 | 2152.1 | 2163.9 | 2155.5 |
| 162.5° | 2189.1 | 2189.1 | 2191.2 | 2204.5 | 2194.7 |
| 165°   | 2226.2 | 2224.1 | 2224.1 | 2238.1 | 2228.3 |
| 167.5° | 2259.8 | 2253.5 | 2253.5 | 2267.4 | 2257.6 |
| 170°   | 2285.0 | 2279.3 | 2277.3 | 2291.2 | 2279.3 |
| 172.5° | 2302.4 | 2296.9 | 2294.7 | 2308.8 | 2296.9 |
| 175°   | 2316.4 | 2310.8 | 2306.6 | 2320.7 | 2308.8 |
| 177.5° | 2324.1 | 2318.5 | 2314.3 | 2326.2 | 2314.3 |
| 180°   | 2320.7 | 2320.7 | 2320.7 | 2320.7 | 2320.7 |

TEST NUMBER: P918077

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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 | 8.07             | 8.79  | 9.15  | 9.86  | 11.34 | 4.04           | 4.76 | 5.12 | 5.84 | 7.32  |
|                 | 3H   | 9.72             | 10.37 | 10.82 | 11.46 | 12.95 | 5.22           | 5.86 | 6.31 | 6.95 | 8.44  |
|                 | 4H   | 10.32            | 10.93 | 11.42 | 12.02 | 13.52 | 5.66           | 6.27 | 6.76 | 7.36 | 8.86  |
|                 | 6H   | 10.73            | 11.29 | 11.84 | 12.38 | 13.89 | 5.97           | 6.53 | 7.08 | 7.62 | 9.13  |
|                 | 8H   | 10.85            | 11.38 | 11.96 | 12.49 | 13.99 | 6.05           | 6.59 | 7.17 | 7.69 | 9.20  |
|                 | 12H  | 10.90            | 11.41 | 12.02 | 12.51 | 14.04 | 6.09           | 6.60 | 7.21 | 7.70 | 9.22  |
| 4H              | 2H   | 8.07             | 8.68  | 9.18  | 9.77  | 11.27 | 4.62           | 5.23 | 5.73 | 6.32 | 7.82  |
|                 | 3H   | 9.88             | 10.38 | 10.99 | 11.50 | 13.01 | 5.95           | 6.46 | 7.07 | 7.58 | 9.09  |
|                 | 4H   | 10.56            | 11.02 | 11.68 | 12.13 | 13.66 | 6.49           | 6.96 | 7.61 | 8.06 | 9.59  |
|                 | 6H   | 11.06            | 11.46 | 12.18 | 12.59 | 14.11 | 6.90           | 7.30 | 8.02 | 8.42 | 9.95  |
|                 | 8H   | 11.23            | 11.60 | 12.35 | 12.72 | 14.26 | 7.02           | 7.39 | 8.15 | 8.51 | 10.05 |
|                 | 12H  | 11.31            | 11.65 | 12.45 | 12.78 | 14.32 | 7.08           | 7.41 | 8.22 | 8.55 | 10.09 |
| 8H              | 4H   | 10.52            | 10.89 | 11.64 | 12.01 | 13.55 | 6.76           | 7.13 | 7.88 | 8.25 | 9.79  |
|                 | 6H   | 11.07            | 11.37 | 12.21 | 12.54 | 14.07 | 7.26           | 7.57 | 8.41 | 8.73 | 10.27 |
|                 | 8H   | 11.28            | 11.55 | 12.43 | 12.69 | 14.24 | 7.45           | 7.72 | 8.60 | 8.86 | 10.42 |
|                 | 12H  | 11.40            | 11.64 | 12.56 | 12.78 | 14.37 | 7.56           | 7.79 | 8.71 | 8.93 | 10.52 |
| 12H             | 4H   | 10.46            | 10.80 | 11.60 | 11.93 | 13.48 | 6.76           | 7.09 | 7.90 | 8.23 | 9.77  |
|                 | 6H   | 11.04            | 11.31 | 12.19 | 12.45 | 14.01 | 7.31           | 7.58 | 8.46 | 8.72 | 10.28 |
|                 | 8H   | 11.25            | 11.49 | 12.41 | 12.63 | 14.22 | 7.51           | 7.75 | 8.67 | 8.88 | 10.48 |

END OF REPORT