

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: P903631

Luminaire Tested: DFN2DIP-SQ3F0-040D080US830-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903631  
REPORT IS A COMBINATION OF REPORTS P901454 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D080US830-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

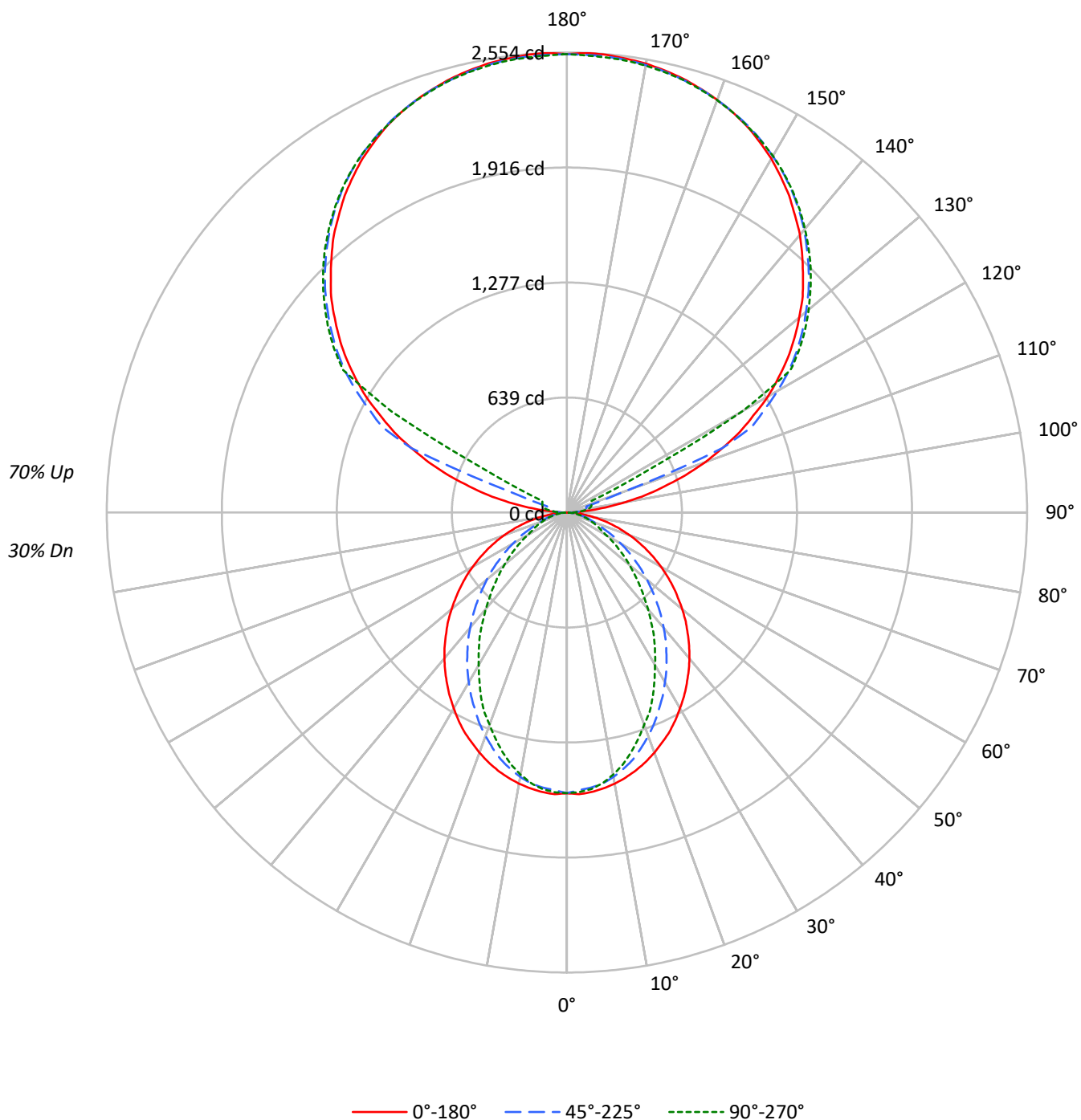
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10669.6 lumens  
Efficiency: N/A  
Efficacy: 115.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 92.7  
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

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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   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 |
| 2   | 85  | 78  | 73  | 68  | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 |
| 4   | 71  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1785 | 1785 | 1785 |
| 5°  | 1787 | 1756 | 1768 |
| 10° | 1768 | 1720 | 1710 |
| 15° | 1743 | 1662 | 1620 |
| 20° | 1709 | 1583 | 1511 |
| 25° | 1675 | 1494 | 1405 |
| 30° | 1630 | 1403 | 1271 |
| 35° | 1585 | 1305 | 1153 |
| 40° | 1540 | 1204 | 1018 |
| 45° | 1487 | 1092 | 896  |
| 50° | 1432 | 979  | 777  |
| 55° | 1375 | 859  | 662  |
| 60° | 1309 | 733  | 545  |
| 65° | 1233 | 605  | 489  |
| 70° | 1140 | 486  | 442  |
| 75° | 1024 | 426  | 401  |
| 80° | 855  | 354  | 346  |
| 85° | 580  | 231  | 257  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1745 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 146.0   | 1.4       |
| 10°-20°   | 400.9   | 3.8       |
| 20°-30°   | 562.8   | 5.3       |
| 30°-40°   | 613.5   | 5.8       |
| 40°-50°   | 563.9   | 5.3       |
| 50°-60°   | 442.9   | 4.2       |
| 60°-70°   | 288.3   | 2.7       |
| 70°-80°   | 148.4   | 1.4       |
| 80°-90°   | 42.4    | 0.4       |
| 90°-100°  | 83.9    | 0.8       |
| 100°-110° | 312.8   | 2.9       |
| 110°-120° | 829.6   | 7.8       |
| 120°-130° | 1376.0  | 12.9      |
| 130°-140° | 1461.6  | 13.7      |
| 140°-150° | 1358.4  | 12.7      |
| 150°-160° | 1092.1  | 10.2      |
| 160°-170° | 703.7   | 6.6       |
| 170°-180° | 242.2   | 2.3       |
| 0°-30°    | 1109.8  | 10.4      |
| 0°-40°    | 1723.3  | 16.2      |
| 0°-60°    | 2730.1  | 25.6      |
| 0°-90°    | 3209.1  | 30.1      |
| 90°-120°  | 1226.4  | 11.5      |
| 90°-150°  | 5422.4  | 50.8      |
| 90°-180°  | 7460.0  | 69.9      |
| 0°-180°   | 10669.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1558 | 1558  | 1558 | 1558  | 1558 |      |
| 5°   | 1558 | 1551  | 1533 | 1546  | 1541 | 148  |
| 15°  | 1482 | 1466  | 1419 | 1392  | 1378 | 418  |
| 25°  | 1345 | 1300  | 1207 | 1149  | 1128 | 619  |
| 35°  | 1159 | 1087  | 963  | 874   | 843  | 726  |
| 45°  | 948  | 853   | 705  | 605   | 571  | 732  |
| 55°  | 721  | 611   | 458  | 374   | 347  | 644  |
| 65°  | 486  | 372   | 245  | 198   | 193  | 482  |
| 75°  | 259  | 161   | 113  | 103   | 102  | 274  |
| 85°  | 61   | 31    | 27   | 27    | 27   | 70   |
| 90°  | 2    | 22    | 37   | 46    | 50   | 10   |
| 95°  | 120  | 59    | 72   | 81    | 79   | 142  |
| 105° | 560  | 615   | 112  | 132   | 140  | 598  |
| 115° | 1059 | 1090  | 1136 | 284   | 151  | 1042 |
| 125° | 1497 | 1521  | 1556 | 1569  | 1574 | 1335 |
| 135° | 1852 | 1882  | 1898 | 1917  | 1913 | 1431 |
| 145° | 2149 | 2147  | 2178 | 2191  | 2182 | 1344 |
| 155° | 2366 | 2350  | 2372 | 2383  | 2368 | 1090 |
| 165° | 2493 | 2482  | 2488 | 2501  | 2488 | 704  |
| 175° | 2550 | 2537  | 2541 | 2554  | 2536 | 243  |
| 180° | 2545 | 2545  | 2545 | 2545  | 2545 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1558.2 | 1558.2 | 1558.2 | 1558.2 | 1558.2 |
| 2.5°   | 1565.3 | 1558.2 | 1542.7 | 1556.9 | 1554.0 |
| 5°     | 1558.2 | 1551.1 | 1532.8 | 1545.5 | 1541.3 |
| 7.5°   | 1545.5 | 1537.1 | 1517.4 | 1522.9 | 1515.9 |
| 10°    | 1528.6 | 1518.7 | 1490.5 | 1486.2 | 1477.9 |
| 12.5°  | 1507.5 | 1494.8 | 1456.6 | 1448.2 | 1432.7 |
| 15°    | 1482.1 | 1466.5 | 1418.6 | 1391.9 | 1377.8 |
| 17.5°  | 1452.5 | 1429.8 | 1370.6 | 1339.6 | 1317.0 |
| 20°    | 1418.6 | 1390.3 | 1319.8 | 1284.7 | 1253.6 |
| 22.5°  | 1382.0 | 1349.5 | 1267.6 | 1219.7 | 1198.7 |
| 25°    | 1345.3 | 1300.1 | 1207.0 | 1149.3 | 1128.0 |
| 27.5°  | 1301.7 | 1253.6 | 1150.7 | 1084.4 | 1051.9 |
| 30°    | 1255.1 | 1201.4 | 1088.5 | 1016.7 | 978.6  |
| 32.5°  | 1209.9 | 1145.0 | 1029.4 | 944.8  | 909.5  |
| 35°    | 1159.2 | 1087.2 | 963.2  | 874.3  | 843.2  |
| 37.5°  | 1109.8 | 1032.2 | 901.1  | 803.7  | 768.5  |
| 40°    | 1057.6 | 973.1  | 836.2  | 736.1  | 699.5  |
| 42.5°  | 1004.0 | 913.8  | 771.4  | 666.9  | 631.8  |
| 45°    | 947.6  | 853.1  | 705.1  | 604.9  | 571.1  |
| 47.5°  | 894.1  | 794.0  | 641.7  | 541.5  | 510.5  |
| 50°    | 834.8  | 734.7  | 579.6  | 482.2  | 452.7  |
| 52.5°  | 776.9  | 671.2  | 520.4  | 427.3  | 400.5  |
| 55°    | 720.6  | 610.6  | 458.3  | 373.7  | 346.9  |
| 57.5°  | 662.8  | 550.0  | 403.3  | 324.3  | 301.8  |
| 60°    | 603.5  | 490.7  | 345.4  | 273.6  | 251.1  |
| 62.5°  | 545.8  | 433.0  | 296.1  | 228.5  | 217.3  |
| 65°    | 486.5  | 372.2  | 245.3  | 197.5  | 193.1  |
| 67.5°  | 430.2  | 315.8  | 197.5  | 173.4  | 169.2  |
| 70°    | 370.9  | 260.9  | 163.5  | 149.5  | 143.7  |
| 72.5°  | 314.5  | 210.1  | 136.8  | 125.5  | 122.7  |
| 75°    | 259.4  | 160.7  | 112.8  | 102.9  | 101.6  |
| 77.5°  | 204.5  | 114.1  | 88.9   | 83.2   | 80.3   |
| 80°    | 153.6  | 81.8   | 67.6   | 62.1   | 62.1   |
| 82.5°  | 107.2  | 55.0   | 46.6   | 43.6   | 43.6   |
| 85°    | 60.6   | 31.0   | 26.8   | 26.8   | 26.8   |
| 87.5°  | 22.6   | 11.2   | 11.2   | 9.9    | 9.9    |
| 90°    | 1.8    | 22.1   | 36.8   | 46.1   | 49.7   |
| 92.5°  | 46.1   | 38.7   | 44.2   | 47.9   | 49.7   |
| 95°    | 119.6  | 58.8   | 71.7   | 81.2   | 79.2   |
| 97.5°  | 215.4  | 64.5   | 93.8   | 99.5   | 101.2  |
| 100°   | 326.0  | 73.7   | 105.0  | 119.6  | 123.3  |
| 102.5° | 447.4  | 443.8  | 108.7  | 128.8  | 134.5  |
| 105°   | 559.8  | 615.1  | 112.4  | 132.5  | 140.0  |
| 107.5° | 690.5  | 736.4  | 116.1  | 136.2  | 143.6  |
| 110°   | 815.9  | 854.3  | 322.3  | 138.2  | 145.4  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 933.7  | 966.7  | 935.5  | 141.7  | 147.4  |
| 115°   | 1058.8 | 1090.1 | 1136.1 | 283.6  | 151.1  |
| 117.5° | 1167.4 | 1204.2 | 1235.7 | 972.1  | 489.8  |
| 120°   | 1289.0 | 1316.5 | 1349.8 | 1371.9 | 1123.2 |
| 122.5° | 1391.9 | 1421.5 | 1458.5 | 1469.4 | 1471.4 |
| 125°   | 1496.9 | 1521.0 | 1555.9 | 1568.9 | 1574.3 |
| 127.5° | 1592.7 | 1618.5 | 1646.3 | 1664.6 | 1666.4 |
| 130°   | 1683.0 | 1712.5 | 1732.7 | 1753.0 | 1751.2 |
| 132.5° | 1775.1 | 1799.1 | 1819.3 | 1835.9 | 1834.1 |
| 135°   | 1852.5 | 1882.0 | 1898.4 | 1917.0 | 1913.3 |
| 137.5° | 1933.4 | 1955.5 | 1974.1 | 1992.4 | 1987.0 |
| 140°   | 2012.5 | 2027.4 | 2047.6 | 2064.2 | 2054.9 |
| 142.5° | 2079.1 | 2091.9 | 2115.7 | 2130.4 | 2121.2 |
| 145°   | 2149.0 | 2147.0 | 2178.3 | 2191.2 | 2182.0 |
| 147.5° | 2209.6 | 2204.1 | 2235.3 | 2244.6 | 2237.3 |
| 150°   | 2268.6 | 2255.7 | 2285.2 | 2296.1 | 2287.0 |
| 152.5° | 2318.3 | 2303.6 | 2331.1 | 2342.3 | 2329.4 |
| 155°   | 2366.2 | 2349.8 | 2371.8 | 2382.7 | 2368.1 |
| 157.5° | 2404.8 | 2390.2 | 2406.8 | 2419.7 | 2404.8 |
| 160°   | 2438.1 | 2427.0 | 2438.1 | 2449.0 | 2436.1 |
| 162.5° | 2467.4 | 2456.5 | 2465.6 | 2478.5 | 2461.9 |
| 165°   | 2493.2 | 2482.3 | 2487.7 | 2500.6 | 2487.7 |
| 167.5° | 2513.5 | 2502.4 | 2508.0 | 2520.9 | 2504.3 |
| 170°   | 2530.2 | 2518.9 | 2522.7 | 2535.6 | 2518.9 |
| 172.5° | 2541.1 | 2530.2 | 2533.8 | 2546.7 | 2530.2 |
| 175°   | 2550.2 | 2537.3 | 2541.1 | 2553.9 | 2535.6 |
| 177.5° | 2553.9 | 2541.1 | 2543.0 | 2555.9 | 2539.3 |
| 180°   | 2544.8 | 2544.8 | 2544.8 | 2544.8 | 2544.8 |

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CATALOG NUMBER: DFN2DIP-SQ3F0-040D080US830-RLONL

**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 | 6.91             | 7.60  | 8.02  | 8.70  | 10.24 | 2.87           | 3.56 | 3.98 | 4.66 | 6.19 |
|                 | 3H   | 8.57             | 9.19  | 9.69  | 10.30 | 11.85 | 4.04           | 4.65 | 5.16 | 5.77 | 7.32 |
|                 | 4H   | 9.17             | 9.75  | 10.30 | 10.87 | 12.42 | 4.48           | 5.06 | 5.61 | 6.18 | 7.73 |
|                 | 6H   | 9.58             | 10.12 | 10.72 | 11.23 | 12.80 | 4.78           | 5.32 | 5.93 | 6.44 | 8.01 |
|                 | 8H   | 9.70             | 10.21 | 10.84 | 11.34 | 12.90 | 4.87           | 5.38 | 6.01 | 6.51 | 8.07 |
|                 | 12H  | 9.75             | 10.24 | 10.90 | 11.37 | 12.95 | 4.90           | 5.39 | 6.05 | 6.52 | 8.10 |
| 4H              | 2H   | 6.90             | 7.49  | 8.05  | 8.61  | 10.16 | 3.44           | 4.03 | 4.58 | 5.14 | 6.70 |
|                 | 3H   | 8.72             | 9.20  | 9.86  | 10.35 | 11.91 | 4.77           | 5.26 | 5.92 | 6.40 | 7.97 |
|                 | 4H   | 9.40             | 9.85  | 10.55 | 10.98 | 12.56 | 5.31           | 5.76 | 6.46 | 6.89 | 8.47 |
|                 | 6H   | 9.90             | 10.28 | 11.06 | 11.44 | 13.02 | 5.71           | 6.10 | 6.87 | 7.25 | 8.83 |
|                 | 8H   | 10.07            | 10.43 | 11.23 | 11.57 | 13.17 | 5.84           | 6.19 | 6.99 | 7.34 | 8.93 |
|                 | 12H  | 10.16            | 10.48 | 11.33 | 11.64 | 13.24 | 5.89           | 6.21 | 7.06 | 7.37 | 8.97 |
| 8H              | 4H   | 9.35             | 9.71  | 10.51 | 10.86 | 12.45 | 5.58           | 5.93 | 6.73 | 7.08 | 8.67 |
|                 | 6H   | 9.91             | 10.20 | 11.08 | 11.39 | 12.98 | 6.08           | 6.37 | 7.25 | 7.56 | 9.15 |
|                 | 8H   | 10.12            | 10.38 | 11.30 | 11.55 | 13.16 | 6.27           | 6.52 | 7.45 | 7.69 | 9.30 |
|                 | 12H  | 10.25            | 10.48 | 11.44 | 11.64 | 13.28 | 6.37           | 6.60 | 7.56 | 7.76 | 9.41 |
| 12H             | 4H   | 9.30             | 9.62  | 10.47 | 10.78 | 12.38 | 5.57           | 5.90 | 6.74 | 7.05 | 8.65 |
|                 | 6H   | 9.88             | 10.14 | 11.06 | 11.31 | 12.92 | 6.13           | 6.38 | 7.31 | 7.55 | 9.16 |
|                 | 8H   | 10.09            | 10.32 | 11.28 | 11.48 | 13.13 | 6.33           | 6.55 | 7.51 | 7.72 | 9.36 |

END OF REPORT