

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: P912563

Luminaire Tested: DFN2DIP-TR3F0-030D070US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912563  
REPORT IS A COMBINATION OF REPORTS P901848 AND P898751  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-030D070US850-RLLONL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

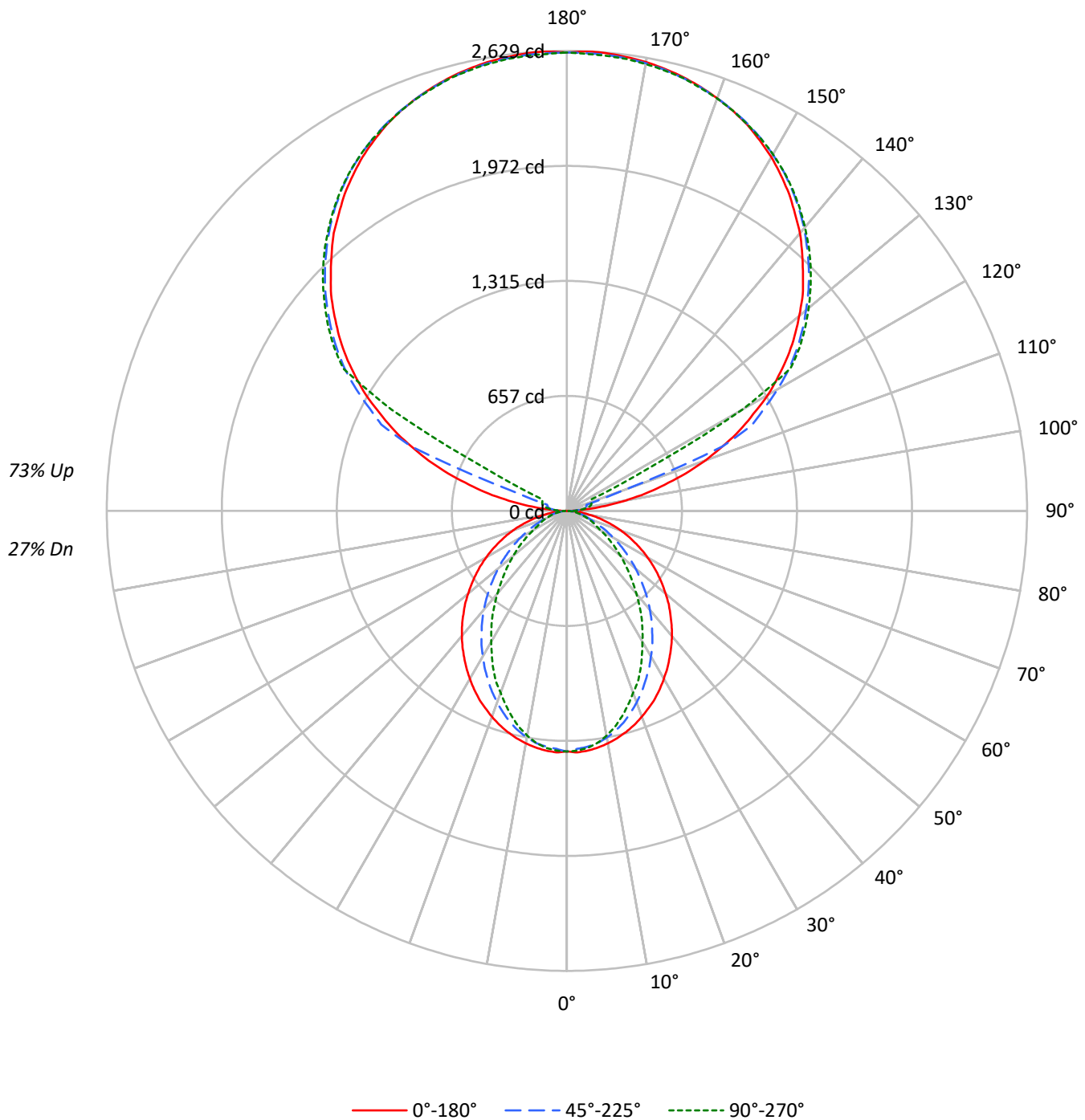
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10513.3 lumens  
Efficiency: N/A  
Efficacy: 136.2 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): 77.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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 | 91 | 91 | 91 | 91 | 71 | 71 | 71 | 52 | 52 | 52 | 35 | 35 | 35 |
| 1   | 93  | 89  | 85  | 82  | 83 | 79 | 76 | 74 | 62 | 60 | 58 | 46 | 45 | 44 | 31 | 31 | 30 |
| 2   | 85  | 78  | 72  | 67  | 75 | 70 | 65 | 61 | 55 | 51 | 49 | 41 | 39 | 37 | 28 | 27 | 26 |
| 3   | 77  | 69  | 62  | 56  | 69 | 62 | 56 | 51 | 48 | 44 | 41 | 36 | 34 | 31 | 25 | 23 | 22 |
| 4   | 71  | 61  | 53  | 48  | 63 | 55 | 48 | 43 | 43 | 39 | 35 | 32 | 29 | 27 | 22 | 21 | 19 |
| 5   | 65  | 54  | 46  | 41  | 58 | 49 | 42 | 37 | 39 | 34 | 30 | 29 | 26 | 23 | 20 | 18 | 17 |
| 6   | 60  | 48  | 41  | 35  | 53 | 44 | 37 | 32 | 35 | 30 | 26 | 26 | 23 | 21 | 18 | 16 | 15 |
| 7   | 55  | 44  | 36  | 31  | 49 | 39 | 33 | 28 | 31 | 27 | 23 | 24 | 21 | 18 | 17 | 15 | 13 |
| 8   | 51  | 40  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 22 | 19 | 16 | 16 | 13 | 12 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 26 | 22 | 18 | 20 | 17 | 15 | 14 | 12 | 11 |
| 10  | 44  | 33  | 26  | 22  | 40 | 30 | 24 | 20 | 24 | 20 | 16 | 19 | 15 | 13 | 13 | 11 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1713 | 1713 | 1713 |
| 5°  | 1715 | 1685 | 1696 |
| 10° | 1697 | 1650 | 1640 |
| 15° | 1673 | 1594 | 1553 |
| 20° | 1641 | 1518 | 1448 |
| 25° | 1609 | 1432 | 1346 |
| 30° | 1565 | 1345 | 1217 |
| 35° | 1522 | 1251 | 1104 |
| 40° | 1479 | 1154 | 974  |
| 45° | 1429 | 1046 | 857  |
| 50° | 1376 | 938  | 742  |
| 55° | 1322 | 822  | 632  |
| 60° | 1258 | 701  | 519  |
| 65° | 1185 | 579  | 466  |
| 70° | 1097 | 464  | 420  |
| 75° | 986  | 406  | 380  |
| 80° | 825  | 336  | 326  |
| 85° | 562  | 217  | 238  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1742 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 128.9   | 1.2       |
| 10°-20°   | 353.8   | 3.4       |
| 20°-30°   | 496.7   | 4.7       |
| 30°-40°   | 541.4   | 5.1       |
| 40°-50°   | 497.6   | 4.7       |
| 50°-60°   | 390.8   | 3.7       |
| 60°-70°   | 254.4   | 2.4       |
| 70°-80°   | 130.9   | 1.2       |
| 80°-90°   | 38.0    | 0.4       |
| 90°-100°  | 86.4    | 0.8       |
| 100°-110° | 322.1   | 3.1       |
| 110°-120° | 854.1   | 8.1       |
| 120°-130° | 1416.6  | 13.5      |
| 130°-140° | 1504.8  | 14.3      |
| 140°-150° | 1398.5  | 13.3      |
| 150°-160° | 1124.4  | 10.7      |
| 160°-170° | 724.5   | 6.9       |
| 170°-180° | 249.4   | 2.4       |
| 0°-30°    | 979.3   | 9.3       |
| 0°-40°    | 1520.7  | 14.5      |
| 0°-60°    | 2409.2  | 22.9      |
| 0°-90°    | 2832.5  | 26.9      |
| 90°-120°  | 1262.6  | 12.0      |
| 90°-150°  | 5582.5  | 53.1      |
| 90°-180°  | 7681.0  | 73.1      |
| 0°-180°   | 10513.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1375 | 1375  | 1375 | 1375  | 1375 |      |
| 5°   | 1375 | 1369  | 1353 | 1364  | 1360 | 130  |
| 15°  | 1308 | 1294  | 1252 | 1228  | 1216 | 369  |
| 25°  | 1187 | 1147  | 1065 | 1014  | 995  | 546  |
| 35°  | 1023 | 959   | 850  | 772   | 744  | 640  |
| 45°  | 836  | 753   | 622  | 534   | 504  | 646  |
| 55°  | 636  | 539   | 404  | 330   | 306  | 568  |
| 65°  | 429  | 328   | 216  | 174   | 170  | 426  |
| 75°  | 229  | 142   | 100  | 91    | 90   | 242  |
| 85°  | 54   | 27    | 24   | 24    | 24   | 61   |
| 90°  | 2    | 23    | 38   | 48    | 51   | 10   |
| 95°  | 123  | 61    | 74   | 84    | 82   | 146  |
| 105° | 576  | 633   | 116  | 136   | 144  | 616  |
| 115° | 1090 | 1122  | 1170 | 292   | 156  | 1073 |
| 125° | 1541 | 1566  | 1602 | 1615  | 1621 | 1375 |
| 135° | 1907 | 1938  | 1954 | 1974  | 1970 | 1473 |
| 145° | 2212 | 2210  | 2243 | 2256  | 2246 | 1384 |
| 155° | 2436 | 2419  | 2442 | 2453  | 2438 | 1123 |
| 165° | 2567 | 2556  | 2561 | 2574  | 2561 | 725  |
| 175° | 2626 | 2612  | 2616 | 2629  | 2610 | 250  |
| 180° | 2620 | 2620  | 2620 | 2620  | 2620 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1375.0 | 1375.0 | 1375.0 | 1375.0 | 1375.0 |
| 2.5°   | 1381.3 | 1375.0 | 1361.3 | 1373.8 | 1371.4 |
| 5°     | 1375.0 | 1368.8 | 1352.6 | 1363.8 | 1360.1 |
| 7.5°   | 1363.8 | 1356.4 | 1339.0 | 1343.9 | 1337.7 |
| 10°    | 1348.9 | 1340.2 | 1315.4 | 1311.5 | 1304.2 |
| 12.5°  | 1330.2 | 1319.0 | 1285.4 | 1278.0 | 1264.3 |
| 15°    | 1307.8 | 1294.1 | 1251.8 | 1228.2 | 1215.8 |
| 17.5°  | 1281.7 | 1261.8 | 1209.5 | 1182.2 | 1162.2 |
| 20°    | 1251.8 | 1226.9 | 1164.7 | 1133.7 | 1106.2 |
| 22.5°  | 1219.6 | 1190.8 | 1118.6 | 1076.4 | 1057.8 |
| 25°    | 1187.2 | 1147.3 | 1065.2 | 1014.2 | 995.4  |
| 27.5°  | 1148.6 | 1106.2 | 1015.4 | 957.0  | 928.2  |
| 30°    | 1107.6 | 1060.2 | 960.6  | 897.3  | 863.6  |
| 32.5°  | 1067.6 | 1010.4 | 908.5  | 833.7  | 802.6  |
| 35°    | 1022.9 | 959.4  | 849.9  | 771.5  | 744.1  |
| 37.5°  | 979.4  | 910.8  | 795.2  | 709.2  | 678.3  |
| 40°    | 933.3  | 858.7  | 737.9  | 649.5  | 617.3  |
| 42.5°  | 886.0  | 806.5  | 680.7  | 588.5  | 557.5  |
| 45°    | 836.3  | 752.8  | 622.3  | 533.8  | 503.9  |
| 47.5°  | 788.9  | 700.7  | 566.3  | 477.8  | 450.5  |
| 50°    | 736.7  | 648.3  | 511.5  | 425.5  | 399.5  |
| 52.5°  | 685.6  | 592.3  | 459.2  | 377.1  | 353.4  |
| 55°    | 635.8  | 538.8  | 404.3  | 329.8  | 306.2  |
| 57.5°  | 584.9  | 485.3  | 356.0  | 286.2  | 266.3  |
| 60°    | 532.5  | 433.1  | 304.9  | 241.4  | 221.6  |
| 62.5°  | 481.6  | 382.1  | 261.3  | 201.6  | 191.7  |
| 65°    | 429.3  | 328.5  | 216.5  | 174.2  | 170.5  |
| 67.5°  | 379.6  | 278.7  | 174.2  | 153.0  | 149.3  |
| 70°    | 327.3  | 230.2  | 144.3  | 131.9  | 126.9  |
| 72.5°  | 277.5  | 185.3  | 120.7  | 110.8  | 108.2  |
| 75°    | 228.9  | 141.8  | 99.6   | 90.8   | 89.6   |
| 77.5°  | 180.4  | 100.7  | 78.4   | 73.4   | 70.9   |
| 80°    | 135.6  | 72.2   | 59.7   | 54.8   | 54.8   |
| 82.5°  | 94.5   | 48.6   | 41.0   | 38.6   | 38.6   |
| 85°    | 53.5   | 27.3   | 23.6   | 23.6   | 23.6   |
| 87.5°  | 20.0   | 9.9    | 9.9    | 8.8    | 8.8    |
| 90°    | 1.8    | 22.7   | 37.8   | 47.5   | 51.1   |
| 92.5°  | 47.5   | 39.8   | 45.5   | 49.4   | 51.1   |
| 95°    | 123.1  | 60.6   | 73.9   | 83.5   | 81.5   |
| 97.5°  | 221.7  | 66.4   | 96.6   | 102.5  | 104.2  |
| 100°   | 335.7  | 75.9   | 108.0  | 123.1  | 127.0  |
| 102.5° | 460.6  | 457.0  | 111.9  | 132.6  | 138.4  |
| 105°   | 576.3  | 633.2  | 115.7  | 136.4  | 144.1  |
| 107.5° | 710.9  | 758.2  | 119.6  | 140.3  | 147.9  |
| 110°   | 840.0  | 879.5  | 331.8  | 142.3  | 149.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 961.3  | 995.2  | 963.1  | 145.8  | 151.7  |
| 115°   | 1090.0 | 1122.2 | 1169.7 | 292.0  | 155.6  |
| 117.5° | 1201.9 | 1239.8 | 1272.1 | 1000.9 | 504.3  |
| 120°   | 1327.0 | 1355.4 | 1389.7 | 1412.4 | 1156.5 |
| 122.5° | 1433.0 | 1463.4 | 1501.6 | 1512.8 | 1514.8 |
| 125°   | 1541.2 | 1565.9 | 1602.0 | 1615.3 | 1620.8 |
| 127.5° | 1639.8 | 1666.3 | 1694.9 | 1713.8 | 1715.6 |
| 130°   | 1732.7 | 1763.1 | 1783.8 | 1804.8 | 1803.0 |
| 132.5° | 1827.5 | 1852.3 | 1873.0 | 1890.1 | 1888.3 |
| 135°   | 1907.1 | 1937.5 | 1954.5 | 1973.6 | 1969.8 |
| 137.5° | 1990.4 | 2013.3 | 2032.4 | 2051.3 | 2045.7 |
| 140°   | 2071.9 | 2087.2 | 2108.0 | 2125.1 | 2115.6 |
| 142.5° | 2140.4 | 2153.7 | 2178.2 | 2193.3 | 2183.8 |
| 145°   | 2212.5 | 2210.5 | 2242.6 | 2255.9 | 2246.5 |
| 147.5° | 2274.8 | 2269.2 | 2301.4 | 2310.8 | 2303.4 |
| 150°   | 2335.6 | 2322.4 | 2352.7 | 2363.9 | 2354.5 |
| 152.5° | 2386.7 | 2371.6 | 2400.0 | 2411.4 | 2398.2 |
| 155°   | 2436.0 | 2419.1 | 2441.8 | 2453.1 | 2438.0 |
| 157.5° | 2475.8 | 2460.8 | 2477.8 | 2491.1 | 2475.8 |
| 160°   | 2510.1 | 2498.6 | 2510.1 | 2521.3 | 2508.0 |
| 162.5° | 2540.3 | 2529.0 | 2538.4 | 2551.7 | 2534.6 |
| 165°   | 2566.8 | 2555.6 | 2561.1 | 2574.4 | 2561.1 |
| 167.5° | 2587.7 | 2576.2 | 2582.1 | 2595.4 | 2578.3 |
| 170°   | 2604.8 | 2593.4 | 2597.2 | 2610.5 | 2593.4 |
| 172.5° | 2616.1 | 2604.8 | 2608.7 | 2621.9 | 2604.8 |
| 175°   | 2625.6 | 2612.2 | 2616.1 | 2629.3 | 2610.5 |
| 177.5° | 2629.3 | 2616.1 | 2618.1 | 2631.4 | 2614.2 |
| 180°   | 2619.9 | 2619.9 | 2619.9 | 2619.9 | 2619.9 |

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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 | 6.30             | 6.97 | 7.43  | 8.09  | 9.66  | 2.27           | 2.94 | 3.41 | 4.07 | 5.64 |
|                 | 3H   | 7.95             | 8.55 | 9.10  | 9.69  | 11.27 | 3.44           | 4.04 | 4.59 | 5.18 | 6.76 |
|                 | 4H   | 8.55             | 9.12 | 9.70  | 10.25 | 11.84 | 3.88           | 4.45 | 5.04 | 5.59 | 7.17 |
|                 | 6H   | 8.95             | 9.48 | 10.11 | 10.61 | 12.21 | 4.19           | 4.71 | 5.35 | 5.85 | 7.45 |
|                 | 8H   | 9.07             | 9.57 | 10.23 | 10.72 | 12.31 | 4.27           | 4.77 | 5.44 | 5.92 | 7.51 |
|                 | 12H  | 9.12             | 9.59 | 10.29 | 10.74 | 12.35 | 4.31           | 4.78 | 5.48 | 5.93 | 7.54 |
| 4H              | 2H   | 6.29             | 6.86 | 7.45  | 8.00  | 9.59  | 2.84           | 3.41 | 4.00 | 4.55 | 6.13 |
|                 | 3H   | 8.10             | 8.57 | 9.26  | 9.73  | 11.33 | 4.17           | 4.65 | 5.34 | 5.81 | 7.41 |
|                 | 4H   | 8.78             | 9.21 | 9.94  | 10.36 | 11.98 | 4.71           | 5.14 | 5.88 | 6.29 | 7.91 |
|                 | 6H   | 9.27             | 9.65 | 10.45 | 10.82 | 12.43 | 5.11           | 5.49 | 6.29 | 6.66 | 8.27 |
|                 | 8H   | 9.44             | 9.79 | 10.61 | 10.95 | 12.58 | 5.24           | 5.58 | 6.41 | 6.75 | 8.37 |
|                 | 12H  | 9.52             | 9.84 | 10.71 | 11.01 | 12.64 | 5.29           | 5.61 | 6.48 | 6.78 | 8.41 |
| 8H              | 4H   | 8.73             | 9.08 | 9.90  | 10.24 | 11.87 | 4.97           | 5.32 | 6.14 | 6.48 | 8.11 |
|                 | 6H   | 9.28             | 9.57 | 10.47 | 10.77 | 12.39 | 5.48           | 5.76 | 6.67 | 6.97 | 8.59 |
|                 | 8H   | 9.49             | 9.74 | 10.69 | 10.92 | 12.57 | 5.66           | 5.91 | 6.86 | 7.09 | 8.74 |
|                 | 12H  | 9.61             | 9.83 | 10.81 | 11.01 | 12.69 | 5.77           | 5.99 | 6.97 | 7.17 | 8.84 |
| 12H             | 4H   | 8.67             | 8.99 | 9.86  | 10.16 | 11.79 | 4.97           | 5.28 | 6.16 | 6.46 | 8.09 |
|                 | 6H   | 9.25             | 9.50 | 10.45 | 10.69 | 12.33 | 5.52           | 5.77 | 6.72 | 6.95 | 8.60 |
|                 | 8H   | 9.46             | 9.68 | 10.66 | 10.86 | 12.54 | 5.72           | 5.94 | 6.92 | 7.12 | 8.80 |

END OF REPORT