

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: P914914

Luminaire Tested: DFN2DIP-SQ4F0-070D140US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914914  
REPORT IS A COMBINATION OF REPORTS P900188 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-070D140US927-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

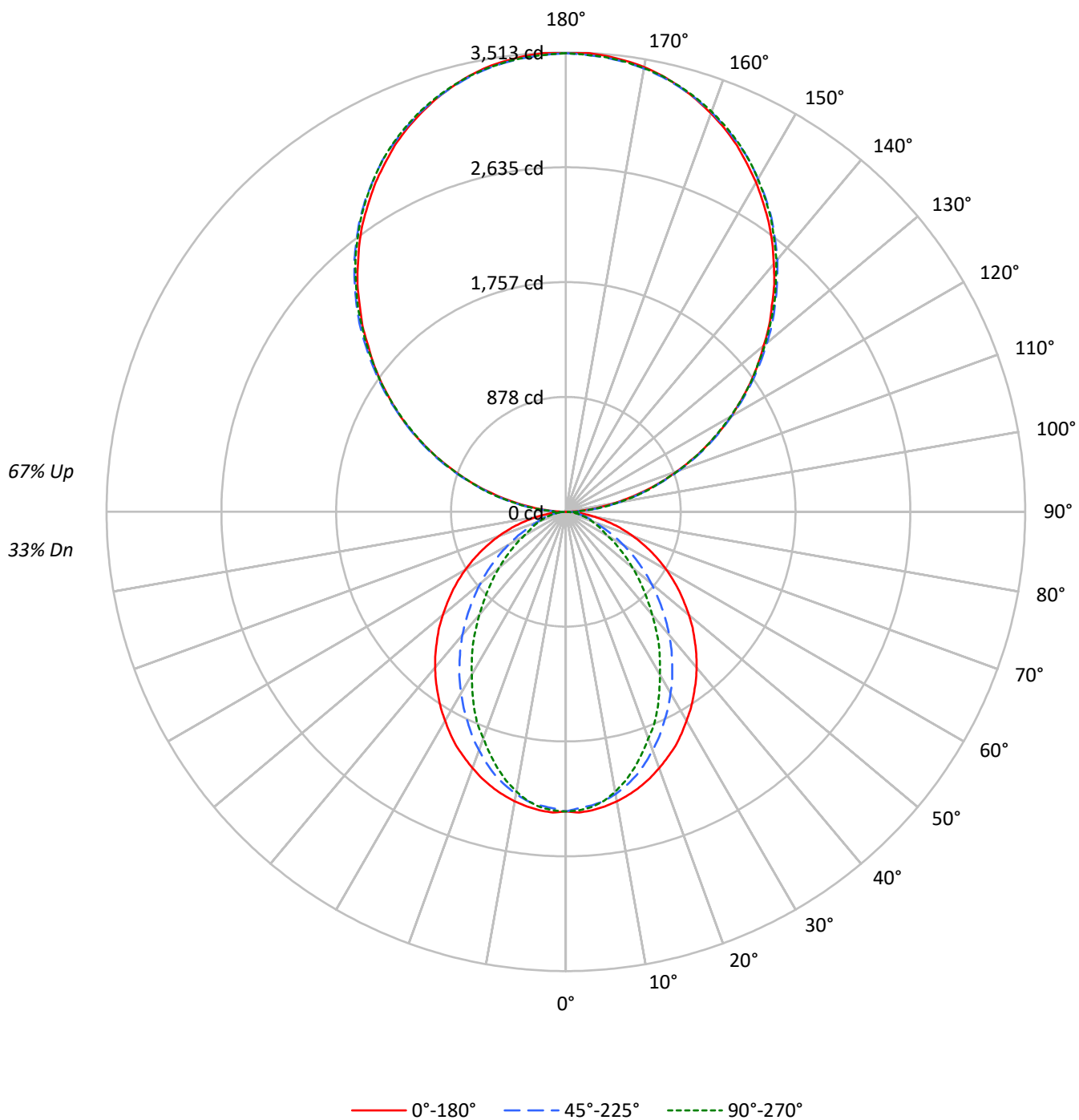
Lumens per Lamp: N/A  
Luminaire Lumens: 14528.6 lumens  
Efficiency: N/A  
Efficacy: 86.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 167.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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



TEST NUMBER: P914914

CATALOG NUMBER: DFN2DIP-SQ4F0-070D140US927-RLFL

**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 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 83  | 85 | 81 | 78 | 75 | 65 | 63 | 61 | 50 | 48 | 47 | 36 | 35 | 34 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 67 | 62 | 57 | 54 | 51 | 44 | 42 | 40 | 32 | 31 | 29 |
| 3   | 79  | 70  | 63  | 57  | 71 | 63 | 57 | 52 | 51 | 46 | 43 | 39 | 36 | 34 | 29 | 27 | 25 |
| 4   | 72  | 62  | 54  | 49  | 65 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 26 | 24 | 22 |
| 5   | 66  | 55  | 47  | 42  | 59 | 50 | 43 | 38 | 40 | 36 | 32 | 32 | 28 | 26 | 23 | 21 | 19 |
| 6   | 61  | 49  | 42  | 36  | 55 | 45 | 38 | 33 | 36 | 32 | 28 | 29 | 25 | 23 | 21 | 19 | 17 |
| 7   | 56  | 45  | 37  | 32  | 51 | 41 | 34 | 29 | 33 | 28 | 25 | 26 | 23 | 20 | 19 | 17 | 15 |
| 8   | 52  | 40  | 33  | 28  | 47 | 37 | 30 | 26 | 30 | 25 | 22 | 24 | 20 | 18 | 18 | 16 | 14 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 27 | 23 | 28 | 23 | 20 | 22 | 19 | 16 | 17 | 14 | 13 |
| 10  | 45  | 34  | 27  | 22  | 41 | 31 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 15 | 13 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1608 | 1608 | 1608 |
| 5°  | 1611 | 1583 | 1593 |
| 10° | 1595 | 1552 | 1542 |
| 15° | 1573 | 1501 | 1462 |
| 20° | 1544 | 1431 | 1364 |
| 25° | 1514 | 1352 | 1269 |
| 30° | 1474 | 1271 | 1149 |
| 35° | 1435 | 1184 | 1044 |
| 40° | 1395 | 1093 | 922  |
| 45° | 1349 | 993  | 813  |
| 50° | 1301 | 892  | 705  |
| 55° | 1251 | 784  | 602  |
| 60° | 1193 | 671  | 496  |
| 65° | 1126 | 556  | 447  |
| 70° | 1046 | 449  | 405  |
| 75° | 945  | 396  | 370  |
| 80° | 798  | 334  | 322  |
| 85° | 555  | 225  | 246  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2759 cd/sqm

TEST NUMBER: P914914

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 214.8   | 1.5       |
| 10°-20°   | 589.7   | 4.1       |
| 20°-30°   | 827.9   | 5.7       |
| 30°-40°   | 902.4   | 6.2       |
| 40°-50°   | 829.4   | 5.7       |
| 50°-60°   | 651.4   | 4.5       |
| 60°-70°   | 424.0   | 2.9       |
| 70°-80°   | 218.2   | 1.5       |
| 80°-90°   | 65.7    | 0.5       |
| 90°-100°  | 217.0   | 1.5       |
| 100°-110° | 689.6   | 4.7       |
| 110°-120° | 1180.2  | 8.1       |
| 120°-130° | 1552.1  | 10.7      |
| 130°-140° | 1742.2  | 12.0      |
| 140°-150° | 1708.4  | 11.8      |
| 150°-160° | 1433.1  | 9.9       |
| 160°-170° | 950.4   | 6.5       |
| 170°-180° | 332.2   | 2.3       |
| 0°-30°    | 1632.3  | 11.2      |
| 0°-40°    | 2534.7  | 17.4      |
| 0°-60°    | 4015.5  | 27.6      |
| 0°-90°    | 4723.4  | 32.5      |
| 90°-120°  | 2086.8  | 14.4      |
| 90°-150°  | 7089.5  | 48.8      |
| 90°-180°  | 9805.0  | 67.5      |
| 0°-180°   | 14528.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2292 | 2292  | 2292 | 2292  | 2292 |      |
| 5°   | 2292 | 2282  | 2254 | 2273  | 2267 | 217  |
| 15°  | 2180 | 2157  | 2086 | 2047  | 2026 | 614  |
| 25°  | 1979 | 1912  | 1775 | 1690  | 1659 | 910  |
| 35°  | 1705 | 1599  | 1417 | 1286  | 1240 | 1067 |
| 45°  | 1394 | 1255  | 1037 | 890   | 840  | 1076 |
| 55°  | 1060 | 898   | 674  | 550   | 510  | 947  |
| 65°  | 716  | 548   | 361  | 290   | 284  | 709  |
| 75°  | 382  | 236   | 166  | 151   | 149  | 404  |
| 85°  | 89   | 46    | 39   | 39    | 39   | 102  |
| 90°  | 3    | 38    | 104  | 97    | 100  | 14   |
| 95°  | 154  | 184   | 189  | 189   | 184  | 172  |
| 105° | 637  | 645   | 651  | 657   | 657  | 672  |
| 115° | 1184 | 1201  | 1196 | 1193  | 1184 | 1171 |
| 125° | 1723 | 1749  | 1740 | 1731  | 1728 | 1539 |
| 135° | 2228 | 2261  | 2267 | 2264  | 2256 | 1722 |
| 145° | 2705 | 2726  | 2743 | 2746  | 2734 | 1690 |
| 155° | 3093 | 3102  | 3111 | 3126  | 3116 | 1424 |
| 165° | 3365 | 3362  | 3362 | 3383  | 3368 | 949  |
| 175° | 3501 | 3493  | 3486 | 3508  | 3490 | 333  |
| 180° | 3508 | 3508  | 3508 | 3508  | 3508 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2291.9 | 2291.9 | 2291.9 | 2291.9 | 2291.9 |
| 2.5°   | 2302.2 | 2291.9 | 2269.0 | 2289.9 | 2285.7 |
| 5°     | 2291.9 | 2281.5 | 2254.5 | 2273.2 | 2267.0 |
| 7.5°   | 2273.2 | 2260.8 | 2231.8 | 2239.9 | 2229.6 |
| 10°    | 2248.3 | 2233.8 | 2192.4 | 2186.0 | 2173.7 |
| 12.5°  | 2217.2 | 2198.5 | 2142.5 | 2130.1 | 2107.2 |
| 15°    | 2179.8 | 2157.0 | 2086.5 | 2047.2 | 2026.5 |
| 17.5°  | 2136.3 | 2103.1 | 2015.9 | 1970.3 | 1937.1 |
| 20°    | 2086.5 | 2044.9 | 1941.3 | 1889.6 | 1843.8 |
| 22.5°  | 2032.7 | 1984.9 | 1864.5 | 1794.1 | 1763.1 |
| 25°    | 1978.7 | 1912.2 | 1775.4 | 1690.4 | 1659.2 |
| 27.5°  | 1914.5 | 1843.8 | 1692.4 | 1595.0 | 1547.2 |
| 30°    | 1846.0 | 1767.0 | 1601.1 | 1495.5 | 1439.4 |
| 32.5°  | 1779.6 | 1684.1 | 1514.2 | 1389.6 | 1337.7 |
| 35°    | 1704.9 | 1599.1 | 1416.7 | 1286.0 | 1240.2 |
| 37.5°  | 1632.4 | 1518.1 | 1325.4 | 1182.1 | 1130.4 |
| 40°    | 1555.5 | 1431.2 | 1229.9 | 1082.7 | 1028.7 |
| 42.5°  | 1476.8 | 1344.1 | 1134.6 | 981.0  | 929.3  |
| 45°    | 1393.8 | 1254.7 | 1037.1 | 889.7  | 839.9  |
| 47.5°  | 1315.0 | 1167.8 | 943.8  | 796.4  | 750.8  |
| 50°    | 1227.9 | 1080.7 | 852.5  | 709.2  | 665.9  |
| 52.5°  | 1142.7 | 987.1  | 765.3  | 628.4  | 589.1  |
| 55°    | 1059.8 | 898.0  | 674.0  | 549.7  | 510.3  |
| 57.5°  | 974.9  | 808.9  | 593.3  | 477.1  | 443.9  |
| 60°    | 887.7  | 721.8  | 508.1  | 402.5  | 369.2  |
| 62.5°  | 802.7  | 636.8  | 435.5  | 336.0  | 319.5  |
| 65°    | 715.6  | 547.5  | 360.9  | 290.5  | 284.1  |
| 67.5°  | 632.6  | 464.5  | 290.5  | 255.0  | 248.9  |
| 70°    | 545.5  | 383.7  | 240.5  | 219.8  | 211.4  |
| 72.5°  | 462.6  | 309.0  | 201.1  | 184.7  | 180.5  |
| 75°    | 381.6  | 236.3  | 165.9  | 151.4  | 149.4  |
| 77.5°  | 300.8  | 167.9  | 130.7  | 122.3  | 118.2  |
| 80°    | 226.0  | 120.3  | 99.5   | 91.3   | 91.3   |
| 82.5°  | 157.6  | 81.0   | 68.4   | 64.2   | 64.2   |
| 85°    | 89.1   | 45.6   | 39.4   | 39.4   | 39.4   |
| 87.5°  | 33.2   | 16.5   | 16.5   | 14.5   | 14.5   |
| 90°    | 3.2    | 38.1   | 103.6  | 97.3   | 100.4  |
| 92.5°  | 65.6   | 88.8   | 92.0   | 95.1   | 95.1   |
| 95°    | 154.4  | 184.0  | 189.3  | 189.3  | 184.0  |
| 97.5°  | 257.0  | 284.5  | 296.1  | 296.1  | 296.1  |
| 100°   | 375.4  | 399.7  | 408.1  | 408.1  | 405.0  |
| 102.5° | 500.2  | 518.2  | 529.8  | 533.0  | 529.8  |
| 105°   | 636.6  | 645.1  | 651.4  | 656.6  | 656.6  |
| 107.5° | 771.9  | 784.7  | 784.7  | 786.7  | 771.9  |
| 110°   | 903.1  | 920.0  | 920.0  | 920.0  | 911.5  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1044.7 | 1062.7 | 1059.5 | 1051.1 | 1044.7 |
| 115°   | 1184.3 | 1201.3 | 1196.0 | 1192.8 | 1184.3 |
| 117.5° | 1322.9 | 1346.2 | 1331.3 | 1322.9 | 1314.4 |
| 120°   | 1462.4 | 1485.7 | 1462.4 | 1462.4 | 1452.9 |
| 122.5° | 1589.4 | 1618.9 | 1604.2 | 1595.7 | 1589.4 |
| 125°   | 1722.6 | 1749.0 | 1740.5 | 1731.0 | 1727.8 |
| 127.5° | 1852.6 | 1885.4 | 1873.7 | 1861.1 | 1852.6 |
| 130°   | 1974.2 | 2012.3 | 2007.0 | 2000.7 | 1989.0 |
| 132.5° | 2110.6 | 2140.2 | 2142.4 | 2127.6 | 2119.1 |
| 135°   | 2228.0 | 2260.8 | 2267.1 | 2264.0 | 2255.5 |
| 137.5° | 2359.1 | 2385.6 | 2390.9 | 2388.7 | 2376.1 |
| 140°   | 2474.4 | 2500.8 | 2515.7 | 2515.7 | 2504.0 |
| 142.5° | 2592.8 | 2619.3 | 2627.7 | 2630.9 | 2619.3 |
| 145°   | 2704.9 | 2726.1 | 2743.0 | 2746.2 | 2734.5 |
| 147.5° | 2805.4 | 2831.8 | 2844.5 | 2849.8 | 2838.1 |
| 150°   | 2909.0 | 2927.0 | 2938.6 | 2948.1 | 2938.6 |
| 152.5° | 3001.0 | 3019.0 | 3033.8 | 3045.4 | 3033.8 |
| 155°   | 3093.0 | 3101.5 | 3111.0 | 3125.8 | 3116.3 |
| 157.5° | 3172.3 | 3178.6 | 3183.9 | 3205.1 | 3190.3 |
| 160°   | 3243.2 | 3249.5 | 3252.7 | 3270.7 | 3257.9 |
| 162.5° | 3308.7 | 3308.7 | 3311.9 | 3332.0 | 3317.2 |
| 165°   | 3364.8 | 3361.6 | 3361.6 | 3382.8 | 3368.0 |
| 167.5° | 3415.5 | 3406.0 | 3406.0 | 3427.1 | 3412.3 |
| 170°   | 3453.6 | 3445.1 | 3441.9 | 3463.1 | 3445.1 |
| 172.5° | 3480.1 | 3471.6 | 3468.4 | 3489.6 | 3471.6 |
| 175°   | 3501.2 | 3492.7 | 3486.4 | 3507.5 | 3489.6 |
| 177.5° | 3512.8 | 3504.4 | 3498.0 | 3515.9 | 3498.0 |
| 180°   | 3507.5 | 3507.5 | 3507.5 | 3507.5 | 3507.5 |

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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 | 6.91             | 7.61  | 8.01  | 8.71  | 10.21 | 2.87           | 3.58 | 3.97 | 4.67 | 6.17 |
|                 | 3H   | 8.58             | 9.21  | 9.69  | 10.31 | 11.83 | 4.05           | 4.68 | 5.16 | 5.78 | 7.30 |
|                 | 4H   | 9.19             | 9.78  | 10.30 | 10.89 | 12.41 | 4.49           | 5.09 | 5.61 | 6.19 | 7.72 |
|                 | 6H   | 9.61             | 10.16 | 10.73 | 11.26 | 12.80 | 4.81           | 5.36 | 5.94 | 6.46 | 8.00 |
|                 | 8H   | 9.73             | 10.25 | 10.86 | 11.37 | 12.90 | 4.90           | 5.42 | 6.03 | 6.54 | 8.07 |
|                 | 12H  | 9.79             | 10.29 | 10.92 | 11.40 | 12.95 | 4.94           | 5.43 | 6.07 | 6.55 | 8.10 |
| 4H              | 2H   | 6.91             | 7.51  | 8.04  | 8.61  | 10.14 | 3.45           | 4.05 | 4.58 | 5.15 | 6.68 |
|                 | 3H   | 8.73             | 9.23  | 9.86  | 10.36 | 11.90 | 4.79           | 5.29 | 5.92 | 6.42 | 7.96 |
|                 | 4H   | 9.42             | 9.88  | 10.56 | 11.00 | 12.56 | 5.34           | 5.79 | 6.47 | 6.91 | 8.47 |
|                 | 6H   | 9.94             | 10.33 | 11.08 | 11.47 | 13.02 | 5.75           | 6.14 | 6.89 | 7.28 | 8.83 |
|                 | 8H   | 10.11            | 10.48 | 11.25 | 11.61 | 13.18 | 5.88           | 6.24 | 7.02 | 7.37 | 8.94 |
|                 | 12H  | 10.20            | 10.54 | 11.36 | 11.68 | 13.25 | 5.93           | 6.27 | 7.09 | 7.41 | 8.98 |
| 8H              | 4H   | 9.38             | 9.75  | 10.52 | 10.88 | 12.45 | 5.61           | 5.97 | 6.75 | 7.11 | 8.67 |
|                 | 6H   | 9.95             | 10.25 | 11.11 | 11.43 | 12.99 | 6.12           | 6.42 | 7.28 | 7.60 | 9.16 |
|                 | 8H   | 10.17            | 10.43 | 11.33 | 11.59 | 13.17 | 6.31           | 6.58 | 7.48 | 7.73 | 9.32 |
|                 | 12H  | 10.30            | 10.54 | 11.47 | 11.69 | 13.30 | 6.43           | 6.66 | 7.60 | 7.81 | 9.43 |
| 12H             | 4H   | 9.33             | 9.66  | 10.49 | 10.81 | 12.38 | 5.61           | 5.94 | 6.76 | 7.08 | 8.65 |
|                 | 6H   | 9.92             | 10.19 | 11.09 | 11.34 | 12.92 | 6.17           | 6.44 | 7.34 | 7.59 | 9.17 |
|                 | 8H   | 10.14            | 10.37 | 11.31 | 11.52 | 13.14 | 6.38           | 6.61 | 7.55 | 7.76 | 9.38 |

END OF REPORT