

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: P914659

Luminaire Tested: DFN2DIP-SQ3F0-070D100US927-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P914659  
REPORT IS A COMBINATION OF REPORTS P901496 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-070D100US927-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

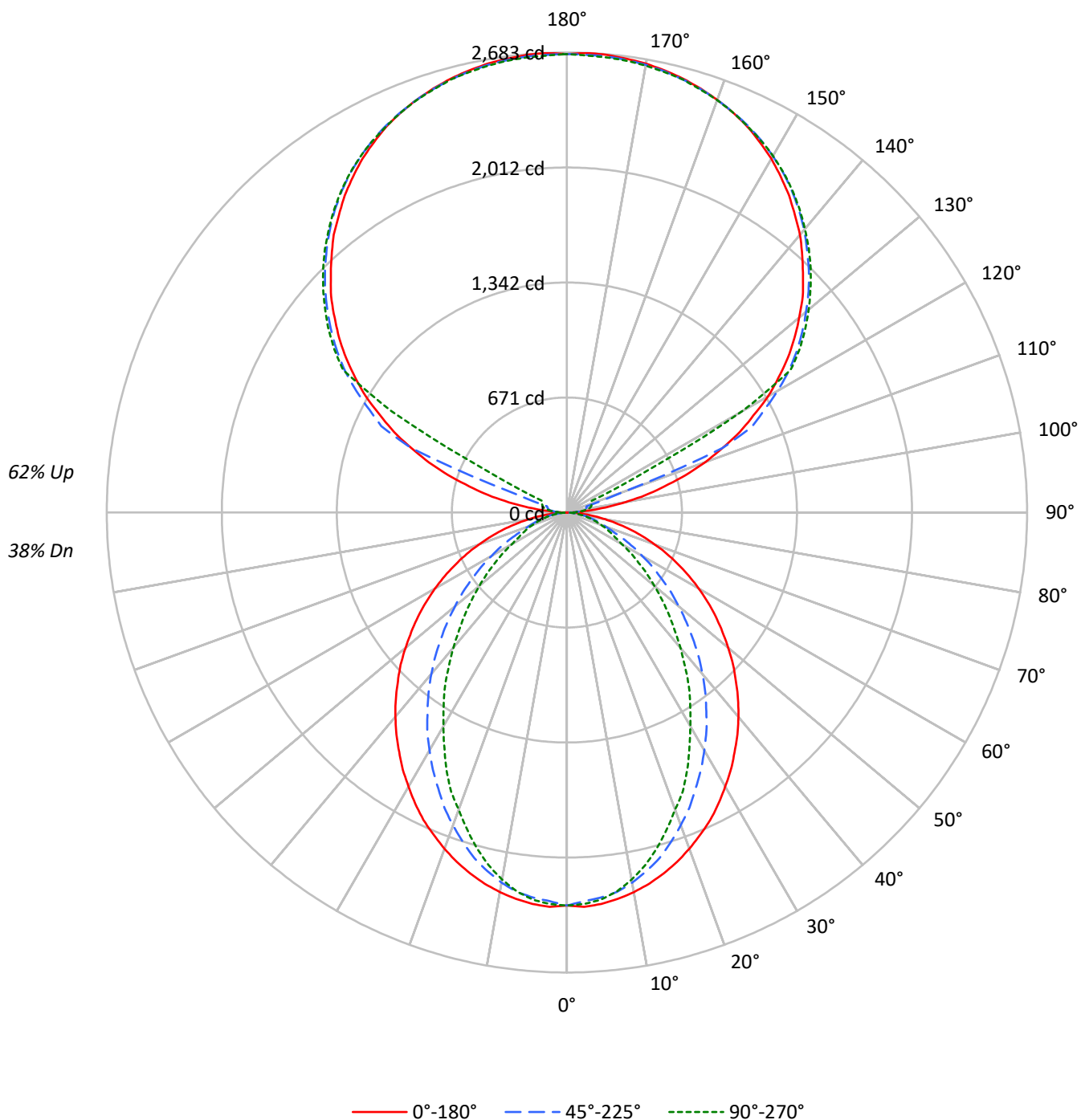
Lumens per Lamp: N/A  
Luminaire Lumens: 12556.0 lumens  
Efficiency: N/A  
Efficacy: 87.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 143.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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 | 95 | 95 | 95 | 95 | 76 | 76 | 76 | 60 | 60 | 60 | 45 | 45 | 45 |
| 1   | 95  | 91  | 88  | 84  | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 53 | 52 | 51 | 40 | 39 | 38 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 64 | 60 | 56 | 53 | 47 | 45 | 43 | 36 | 34 | 33 |
| 3   | 80  | 71  | 64  | 58  | 72 | 64 | 58 | 54 | 53 | 48 | 45 | 42 | 39 | 37 | 32 | 30 | 28 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 39 | 38 | 34 | 32 | 29 | 27 | 25 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 42 | 37 | 33 | 34 | 30 | 28 | 26 | 24 | 22 |
| 6   | 62  | 50  | 43  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 21 | 19 |
| 7   | 57  | 45  | 38  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 28 | 24 | 22 | 22 | 19 | 17 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 32 | 27 | 23 | 26 | 22 | 19 | 20 | 18 | 16 |
| 9   | 49  | 38  | 30  | 26  | 45 | 35 | 28 | 24 | 29 | 24 | 21 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 21 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2626 | 2626 | 2626 |
| 5°  | 2629 | 2583 | 2600 |
| 10° | 2601 | 2530 | 2515 |
| 15° | 2563 | 2445 | 2383 |
| 20° | 2514 | 2328 | 2222 |
| 25° | 2464 | 2197 | 2066 |
| 30° | 2397 | 2063 | 1869 |
| 35° | 2331 | 1920 | 1696 |
| 40° | 2265 | 1771 | 1498 |
| 45° | 2187 | 1606 | 1318 |
| 50° | 2107 | 1440 | 1143 |
| 55° | 2023 | 1263 | 974  |
| 60° | 1925 | 1078 | 801  |
| 65° | 1813 | 890  | 720  |
| 70° | 1677 | 715  | 650  |
| 75° | 1506 | 627  | 590  |
| 80° | 1258 | 520  | 508  |
| 85° | 853  | 339  | 377  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2187 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 214.8   | 1.7       |
| 10°-20°   | 589.7   | 4.7       |
| 20°-30°   | 827.9   | 6.6       |
| 30°-40°   | 902.4   | 7.2       |
| 40°-50°   | 829.4   | 6.6       |
| 50°-60°   | 651.4   | 5.2       |
| 60°-70°   | 424.0   | 3.4       |
| 70°-80°   | 218.2   | 1.7       |
| 80°-90°   | 60.4    | 0.5       |
| 90°-100°  | 88.1    | 0.7       |
| 100°-110° | 328.6   | 2.6       |
| 110°-120° | 871.6   | 6.9       |
| 120°-130° | 1445.6  | 11.5      |
| 130°-140° | 1535.6  | 12.2      |
| 140°-150° | 1427.1  | 11.4      |
| 150°-160° | 1147.4  | 9.1       |
| 160°-170° | 739.3   | 5.9       |
| 170°-180° | 254.5   | 2.0       |
| 0°-30°    | 1632.3  | 13.0      |
| 0°-40°    | 2534.7  | 20.2      |
| 0°-60°    | 4015.5  | 32.0      |
| 0°-90°    | 4718.2  | 37.6      |
| 90°-120°  | 1288.4  | 10.3      |
| 90°-150°  | 5696.7  | 45.4      |
| 90°-180°  | 7838.0  | 62.4      |
| 0°-180°   | 12556.0 | 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°  | 2    | 23    | 39   | 48    | 52   | 12   |
| 95°  | 126  | 62    | 75   | 85    | 83   | 149  |
| 105° | 588  | 646   | 118  | 139   | 147  | 628  |
| 115° | 1112 | 1145  | 1194 | 298   | 159  | 1095 |
| 125° | 1573 | 1598  | 1635 | 1648  | 1654 | 1403 |
| 135° | 1946 | 1977  | 1994 | 2014  | 2010 | 1503 |
| 145° | 2258 | 2256  | 2288 | 2302  | 2292 | 1412 |
| 155° | 2486 | 2469  | 2492 | 2503  | 2488 | 1146 |
| 165° | 2619 | 2608  | 2614 | 2627  | 2614 | 740  |
| 175° | 2679 | 2666  | 2670 | 2683  | 2664 | 255  |
| 180° | 2674 | 2674  | 2674 | 2674  | 2674 |      |

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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°    | 1.8    | 23.2   | 38.6   | 48.5   | 52.1   |
| 92.5°  | 48.5   | 40.6   | 46.4   | 50.3   | 52.1   |
| 95°    | 125.6  | 61.8   | 75.3   | 85.2   | 83.2   |
| 97.5°  | 226.2  | 67.7   | 98.5   | 104.5  | 106.4  |
| 100°   | 342.5  | 77.4   | 110.3  | 125.6  | 129.6  |
| 102.5° | 470.0  | 466.4  | 114.2  | 135.3  | 141.2  |
| 105°   | 588.1  | 646.2  | 118.1  | 139.2  | 147.0  |
| 107.5° | 725.5  | 773.7  | 122.0  | 143.1  | 150.9  |
| 110°   | 857.1  | 897.5  | 338.6  | 145.2  | 152.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 980.9  | 1015.6 | 982.8  | 148.9  | 154.9  |
| 115°   | 1112.3 | 1145.2 | 1193.7 | 297.9  | 158.8  |
| 117.5° | 1226.5 | 1265.1 | 1298.1 | 1021.4 | 514.6  |
| 120°   | 1354.2 | 1383.1 | 1418.1 | 1441.3 | 1180.1 |
| 122.5° | 1462.4 | 1493.4 | 1532.2 | 1543.7 | 1545.8 |
| 125°   | 1572.7 | 1598.0 | 1634.7 | 1648.3 | 1654.0 |
| 127.5° | 1673.3 | 1700.4 | 1729.6 | 1748.9 | 1750.7 |
| 130°   | 1768.1 | 1799.2 | 1820.4 | 1841.7 | 1839.8 |
| 132.5° | 1864.9 | 1890.1 | 1911.3 | 1928.7 | 1926.9 |
| 135°   | 1946.2 | 1977.2 | 1994.5 | 2014.0 | 2010.1 |
| 137.5° | 2031.2 | 2054.4 | 2073.9 | 2093.3 | 2087.5 |
| 140°   | 2114.3 | 2130.0 | 2151.1 | 2168.6 | 2158.9 |
| 142.5° | 2184.2 | 2197.7 | 2222.8 | 2238.1 | 2228.6 |
| 145°   | 2257.7 | 2255.7 | 2288.5 | 2302.1 | 2292.4 |
| 147.5° | 2321.3 | 2315.6 | 2348.4 | 2358.1 | 2350.6 |
| 150°   | 2383.4 | 2369.8 | 2400.9 | 2412.4 | 2402.7 |
| 152.5° | 2435.5 | 2420.1 | 2449.1 | 2460.8 | 2447.2 |
| 155°   | 2485.9 | 2468.6 | 2491.8 | 2503.3 | 2487.9 |
| 157.5° | 2526.5 | 2511.1 | 2528.6 | 2542.1 | 2526.5 |
| 160°   | 2561.4 | 2549.7 | 2561.4 | 2572.9 | 2559.4 |
| 162.5° | 2592.2 | 2580.7 | 2590.4 | 2603.9 | 2586.5 |
| 165°   | 2619.3 | 2607.8 | 2613.6 | 2627.1 | 2613.6 |
| 167.5° | 2640.7 | 2628.9 | 2635.0 | 2648.5 | 2631.0 |
| 170°   | 2658.1 | 2646.4 | 2650.3 | 2663.9 | 2646.4 |
| 172.5° | 2669.6 | 2658.1 | 2662.0 | 2675.6 | 2658.1 |
| 175°   | 2679.2 | 2665.7 | 2669.6 | 2683.2 | 2663.9 |
| 177.5° | 2683.2 | 2669.6 | 2671.7 | 2685.3 | 2667.7 |
| 180°   | 2673.5 | 2673.5 | 2673.5 | 2673.5 | 2673.5 |

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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 | 9.18             | 9.92  | 10.25 | 10.98 | 12.42 | 5.15           | 5.88 | 6.21 | 6.95  | 8.39  |
|                 | 3H   | 10.85            | 11.51 | 11.92 | 12.58 | 14.04 | 6.32           | 6.98 | 7.39 | 8.05  | 9.51  |
|                 | 4H   | 11.45            | 12.08 | 12.53 | 13.15 | 14.61 | 6.76           | 7.39 | 7.85 | 8.46  | 9.92  |
|                 | 6H   | 11.86            | 12.44 | 12.96 | 13.52 | 14.99 | 7.07           | 7.65 | 8.16 | 8.72  | 10.20 |
|                 | 8H   | 11.99            | 12.53 | 13.08 | 13.62 | 15.10 | 7.16           | 7.70 | 8.25 | 8.80  | 10.27 |
|                 | 12H  | 12.04            | 12.56 | 13.14 | 13.65 | 15.14 | 7.19           | 7.71 | 8.30 | 8.80  | 10.29 |
| 4H              | 2H   | 9.19             | 9.81  | 10.28 | 10.89 | 12.35 | 5.73           | 6.35 | 6.82 | 7.42  | 8.89  |
|                 | 3H   | 11.00            | 11.52 | 12.10 | 12.62 | 14.10 | 7.06           | 7.58 | 8.16 | 8.68  | 10.16 |
|                 | 4H   | 11.69            | 12.17 | 12.79 | 13.26 | 14.76 | 7.60           | 8.08 | 8.70 | 9.17  | 10.67 |
|                 | 6H   | 12.20            | 12.60 | 13.30 | 13.72 | 15.21 | 8.01           | 8.42 | 9.12 | 9.53  | 11.02 |
|                 | 8H   | 12.37            | 12.75 | 13.48 | 13.85 | 15.36 | 8.13           | 8.51 | 9.24 | 9.62  | 11.12 |
|                 | 12H  | 12.45            | 12.80 | 13.58 | 13.92 | 15.43 | 8.19           | 8.53 | 9.31 | 9.65  | 11.16 |
| 8H              | 4H   | 11.65            | 12.03 | 12.76 | 13.13 | 14.64 | 7.87           | 8.25 | 8.98 | 9.36  | 10.86 |
|                 | 6H   | 12.21            | 12.52 | 13.34 | 13.67 | 15.17 | 8.38           | 8.69 | 9.51 | 9.84  | 11.34 |
|                 | 8H   | 12.42            | 12.69 | 13.56 | 13.82 | 15.35 | 8.56           | 8.84 | 9.70 | 9.97  | 11.49 |
|                 | 12H  | 12.55            | 12.79 | 13.69 | 13.92 | 15.48 | 8.67           | 8.91 | 9.81 | 10.04 | 11.60 |
| 12H             | 4H   | 11.60            | 11.94 | 12.72 | 13.06 | 14.57 | 7.87           | 8.22 | 9.00 | 9.33  | 10.85 |
|                 | 6H   | 12.18            | 12.46 | 13.32 | 13.58 | 15.11 | 8.42           | 8.70 | 9.56 | 9.83  | 11.35 |
|                 | 8H   | 12.39            | 12.64 | 13.53 | 13.76 | 15.32 | 8.63           | 8.87 | 9.77 | 9.99  | 11.55 |

END OF REPORT