

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: P904460

Luminaire Tested: DFN2DIP-TR3F0-060D080US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P904460  
REPORT IS A COMBINATION OF REPORTS P900348 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-060D080US830-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

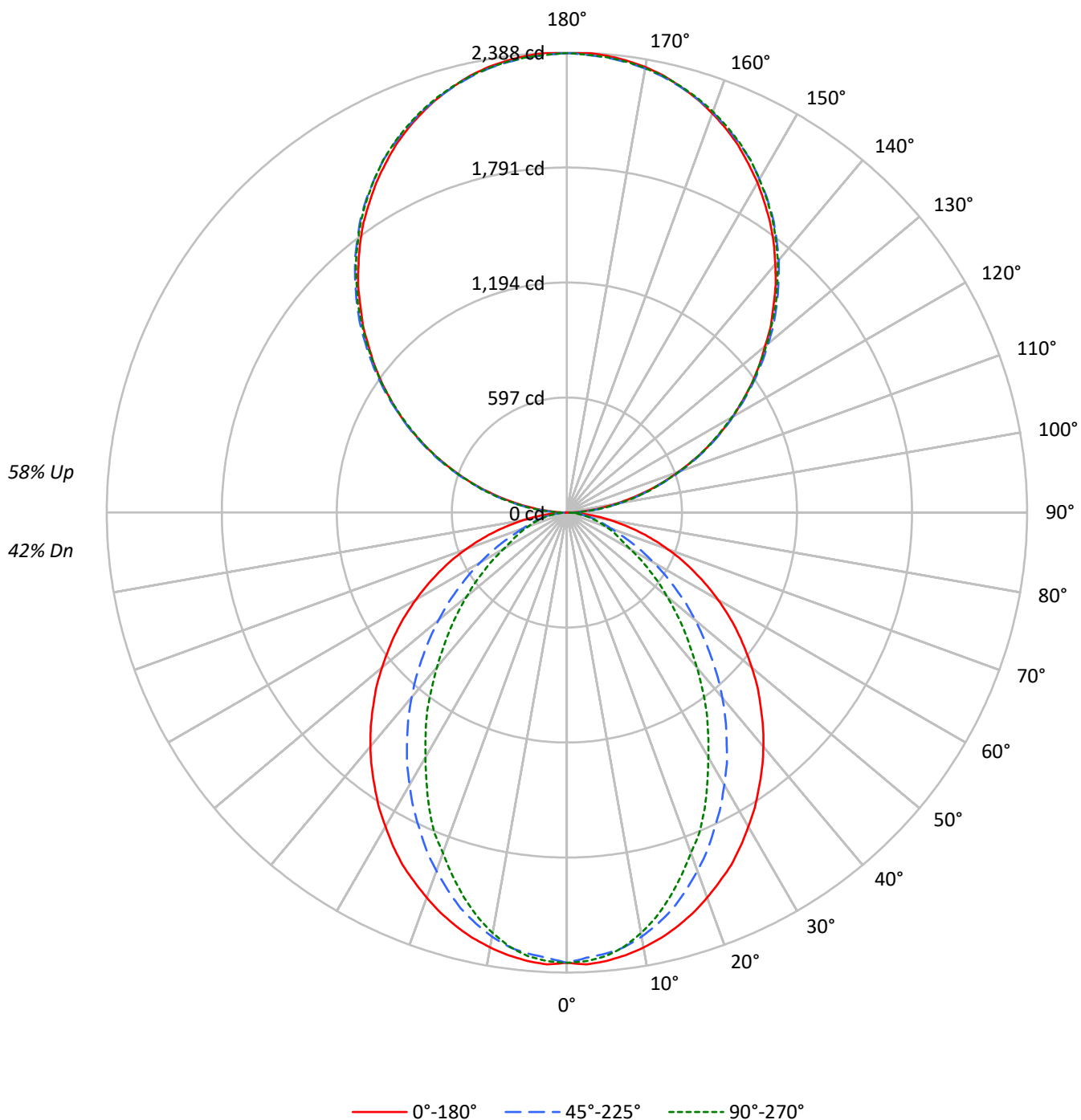
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11480.2 lumens  
Efficiency: N/A  
Efficacy: 96.9 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: General Diffuse  
  
Input Watts (W): 118.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P904460

CATALOG NUMBER: DFN2DIP-TR3F0-060D080US830-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P904460

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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 47 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 40 | 34 | 30 | 33 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 28 | 33 | 28 | 24 | 27 | 23 | 21 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 36 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 19 | 20 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2913 | 2913 | 2913 |
| 5°  | 2916 | 2864 | 2883 |
| 10° | 2885 | 2805 | 2787 |
| 15° | 2844 | 2710 | 2640 |
| 20° | 2790 | 2580 | 2461 |
| 25° | 2734 | 2435 | 2288 |
| 30° | 2660 | 2286 | 2068 |
| 35° | 2588 | 2126 | 1876 |
| 40° | 2514 | 1961 | 1656 |
| 45° | 2428 | 1778 | 1456 |
| 50° | 2339 | 1594 | 1262 |
| 55° | 2246 | 1397 | 1074 |
| 60° | 2139 | 1192 | 882  |
| 65° | 2015 | 984  | 792  |
| 70° | 1865 | 789  | 714  |
| 75° | 1676 | 690  | 646  |
| 80° | 1402 | 571  | 553  |
| 85° | 954  | 370  | 405  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2428 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 219.1   | 1.9       |
| 10°-20°   | 601.3   | 5.2       |
| 20°-30°   | 844.3   | 7.4       |
| 30°-40°   | 920.3   | 8.0       |
| 40°-50°   | 845.9   | 7.4       |
| 50°-60°   | 664.3   | 5.8       |
| 60°-70°   | 432.4   | 3.8       |
| 70°-80°   | 222.6   | 1.9       |
| 80°-90°   | 63.6    | 0.6       |
| 90°-100°  | 147.6   | 1.3       |
| 100°-110° | 468.9   | 4.1       |
| 110°-120° | 802.4   | 7.0       |
| 120°-130° | 1055.3  | 9.2       |
| 130°-140° | 1184.5  | 10.3      |
| 140°-150° | 1161.5  | 10.1      |
| 150°-160° | 974.4   | 8.5       |
| 160°-170° | 646.2   | 5.6       |
| 170°-180° | 225.9   | 2.0       |
| 0°-30°    | 1664.7  | 14.5      |
| 0°-40°    | 2585.0  | 22.5      |
| 0°-60°    | 4095.1  | 35.7      |
| 0°-90°    | 4813.7  | 41.9      |
| 90°-120°  | 1418.8  | 12.4      |
| 90°-150°  | 4820.1  | 42.0      |
| 90°-180°  | 6666.0  | 58.1      |
| 0°-180°   | 11480.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2337 | 2337  | 2337 | 2337  | 2337 |      |
| 5°   | 2337 | 2327  | 2299 | 2318  | 2312 | 222  |
| 15°  | 2223 | 2200  | 2128 | 2088  | 2067 | 626  |
| 25°  | 2018 | 1950  | 1811 | 1724  | 1692 | 928  |
| 35°  | 1739 | 1631  | 1445 | 1312  | 1265 | 1088 |
| 45°  | 1421 | 1280  | 1058 | 907   | 857  | 1098 |
| 55°  | 1081 | 916   | 687  | 561   | 520  | 966  |
| 65°  | 730  | 558   | 368  | 296   | 290  | 724  |
| 75°  | 389  | 241   | 169  | 154   | 152  | 412  |
| 85°  | 91   | 46    | 40   | 40    | 40   | 104  |
| 90°  | 2    | 26    | 70   | 66    | 68   | 11   |
| 95°  | 105  | 125   | 129  | 129   | 125  | 117  |
| 105° | 433  | 439   | 443  | 446   | 446  | 457  |
| 115° | 805  | 817   | 813  | 811   | 805  | 796  |
| 125° | 1171 | 1189  | 1183 | 1177  | 1175 | 1047 |
| 135° | 1515 | 1537  | 1541 | 1539  | 1534 | 1171 |
| 145° | 1839 | 1853  | 1865 | 1867  | 1859 | 1149 |
| 155° | 2103 | 2109  | 2115 | 2125  | 2119 | 968  |
| 165° | 2288 | 2286  | 2286 | 2300  | 2290 | 645  |
| 175° | 2380 | 2375  | 2370 | 2385  | 2372 | 226  |
| 180° | 2385 | 2385  | 2385 | 2385  | 2385 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2337.3 | 2337.3 | 2337.3 | 2337.3 | 2337.3 |
| 2.5°   | 2347.9 | 2337.3 | 2313.9 | 2335.2 | 2331.0 |
| 5°     | 2337.3 | 2326.8 | 2299.1 | 2318.3 | 2312.0 |
| 7.5°   | 2318.3 | 2305.6 | 2276.1 | 2284.3 | 2273.8 |
| 10°    | 2292.8 | 2278.0 | 2235.9 | 2229.4 | 2216.8 |
| 12.5°  | 2261.3 | 2242.1 | 2184.9 | 2172.4 | 2149.0 |
| 15°    | 2223.1 | 2199.7 | 2127.9 | 2087.7 | 2066.6 |
| 17.5°  | 2178.7 | 2144.8 | 2055.9 | 2009.4 | 1975.6 |
| 20°    | 2127.9 | 2085.5 | 1979.8 | 1927.0 | 1880.4 |
| 22.5°  | 2072.9 | 2024.2 | 1901.5 | 1829.7 | 1798.0 |
| 25°    | 2018.0 | 1950.2 | 1810.6 | 1724.0 | 1692.1 |
| 27.5°  | 1952.5 | 1880.4 | 1726.0 | 1626.5 | 1577.9 |
| 30°    | 1882.6 | 1802.0 | 1632.9 | 1525.1 | 1467.9 |
| 32.5°  | 1814.9 | 1717.5 | 1544.3 | 1417.2 | 1364.2 |
| 35°    | 1738.8 | 1630.9 | 1444.8 | 1311.5 | 1264.8 |
| 37.5°  | 1664.7 | 1548.2 | 1351.7 | 1205.6 | 1152.8 |
| 40°    | 1586.4 | 1459.6 | 1254.2 | 1104.1 | 1049.1 |
| 42.5°  | 1506.1 | 1370.7 | 1157.1 | 1000.4 | 947.7  |
| 45°    | 1421.4 | 1279.6 | 1057.7 | 907.3  | 856.6  |
| 47.5°  | 1341.1 | 1191.0 | 962.5  | 812.2  | 765.7  |
| 50°    | 1252.3 | 1102.1 | 869.4  | 723.3  | 679.1  |
| 52.5°  | 1165.4 | 1006.7 | 780.5  | 640.9  | 600.8  |
| 55°    | 1080.8 | 915.9  | 687.4  | 560.6  | 520.4  |
| 57.5°  | 994.2  | 824.9  | 605.0  | 486.5  | 452.6  |
| 60°    | 905.3  | 736.1  | 518.2  | 410.5  | 376.5  |
| 62.5°  | 818.7  | 649.5  | 444.1  | 342.7  | 325.8  |
| 65°    | 729.8  | 558.4  | 368.1  | 296.2  | 289.7  |
| 67.5°  | 645.2  | 473.7  | 296.2  | 260.1  | 253.8  |
| 70°    | 556.3  | 391.3  | 245.2  | 224.2  | 215.7  |
| 72.5°  | 471.7  | 315.1  | 205.1  | 188.3  | 184.0  |
| 75°    | 389.2  | 241.0  | 169.2  | 154.4  | 152.4  |
| 77.5°  | 306.8  | 171.3  | 133.3  | 124.8  | 120.6  |
| 80°    | 230.5  | 122.7  | 101.4  | 93.1   | 93.1   |
| 82.5°  | 160.7  | 82.6   | 69.7   | 65.5   | 65.5   |
| 85°    | 90.9   | 46.5   | 40.2   | 40.2   | 40.2   |
| 87.5°  | 33.9   | 16.9   | 16.9   | 14.8   | 14.8   |
| 90°    | 2.2    | 25.9   | 70.5   | 66.2   | 68.3   |
| 92.5°  | 44.6   | 60.4   | 62.6   | 64.7   | 64.7   |
| 95°    | 105.0  | 125.1  | 128.7  | 128.7  | 125.1  |
| 97.5°  | 174.7  | 193.4  | 201.3  | 201.3  | 201.3  |
| 100°   | 255.2  | 271.7  | 277.5  | 277.5  | 275.3  |
| 102.5° | 340.1  | 352.3  | 360.1  | 362.3  | 360.1  |
| 105°   | 432.8  | 438.6  | 442.9  | 446.5  | 446.5  |
| 107.5° | 524.8  | 533.5  | 533.5  | 534.9  | 524.8  |
| 110°   | 614.0  | 625.5  | 625.5  | 625.5  | 619.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 710.3  | 722.6  | 720.4  | 714.6  | 710.3  |
| 115°   | 805.2  | 816.7  | 813.1  | 811.0  | 805.2  |
| 117.5° | 899.4  | 915.2  | 905.1  | 899.4  | 893.6  |
| 120°   | 994.3  | 1010.1 | 994.3  | 994.3  | 987.8  |
| 122.5° | 1080.5 | 1100.7 | 1090.6 | 1084.9 | 1080.5 |
| 125°   | 1171.1 | 1189.1 | 1183.4 | 1176.9 | 1174.8 |
| 127.5° | 1259.6 | 1281.9 | 1273.9 | 1265.4 | 1259.6 |
| 130°   | 1342.3 | 1368.1 | 1364.5 | 1360.3 | 1352.4 |
| 132.5° | 1435.0 | 1455.1 | 1456.6 | 1446.5 | 1440.8 |
| 135°   | 1514.8 | 1537.1 | 1541.4 | 1539.3 | 1533.5 |
| 137.5° | 1603.9 | 1621.9 | 1625.5 | 1624.1 | 1615.4 |
| 140°   | 1682.3 | 1700.3 | 1710.3 | 1710.3 | 1702.4 |
| 142.5° | 1762.8 | 1780.8 | 1786.6 | 1788.8 | 1780.8 |
| 145°   | 1839.1 | 1853.4 | 1864.9 | 1867.1 | 1859.2 |
| 147.5° | 1907.3 | 1925.3 | 1933.9 | 1937.6 | 1929.7 |
| 150°   | 1977.8 | 1990.0 | 1997.9 | 2004.4 | 1997.9 |
| 152.5° | 2040.3 | 2052.6 | 2062.7 | 2070.6 | 2062.7 |
| 155°   | 2102.9 | 2108.7 | 2115.2 | 2125.2 | 2118.7 |
| 157.5° | 2156.8 | 2161.2 | 2164.7 | 2179.1 | 2169.1 |
| 160°   | 2205.0 | 2209.3 | 2211.5 | 2223.6 | 2215.1 |
| 162.5° | 2249.6 | 2249.6 | 2251.7 | 2265.4 | 2255.3 |
| 165°   | 2287.6 | 2285.5 | 2285.5 | 2299.9 | 2289.8 |
| 167.5° | 2322.1 | 2315.7 | 2315.7 | 2330.1 | 2320.0 |
| 170°   | 2348.1 | 2342.3 | 2340.1 | 2354.6 | 2342.3 |
| 172.5° | 2366.1 | 2360.3 | 2358.1 | 2372.5 | 2360.3 |
| 175°   | 2380.4 | 2374.6 | 2370.3 | 2384.7 | 2372.5 |
| 177.5° | 2388.3 | 2382.6 | 2378.2 | 2390.5 | 2378.2 |
| 180°   | 2384.7 | 2384.7 | 2384.7 | 2384.7 | 2384.7 |

TEST NUMBER: P904460

CATALOG NUMBER: DFN2DIP-TR3F0-060D080US830-RLLFLL

**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 | 10.00            | 10.77 | 11.03 | 11.81 | 13.19 | 5.98           | 6.75 | 7.01  | 7.78  | 9.17  |
|                 | 3H   | 11.67            | 12.35 | 12.71 | 13.40 | 14.80 | 7.16           | 7.85 | 8.20  | 8.89  | 10.29 |
|                 | 4H   | 12.27            | 12.92 | 13.32 | 13.96 | 15.37 | 7.60           | 8.25 | 8.65  | 9.30  | 10.71 |
|                 | 6H   | 12.68            | 13.28 | 13.74 | 14.32 | 15.75 | 7.92           | 8.51 | 8.98  | 9.56  | 10.99 |
|                 | 8H   | 12.80            | 13.37 | 13.86 | 14.43 | 15.85 | 8.00           | 8.57 | 9.07  | 9.64  | 11.05 |
|                 | 12H  | 12.85            | 13.39 | 13.92 | 14.45 | 15.89 | 8.04           | 8.58 | 9.11  | 9.64  | 11.08 |
| 4H              | 2H   | 10.01            | 10.66 | 11.07 | 11.71 | 13.12 | 6.56           | 7.21 | 7.62  | 8.26  | 9.67  |
|                 | 3H   | 11.83            | 12.37 | 12.89 | 13.44 | 14.86 | 7.90           | 8.44 | 8.97  | 9.51  | 10.94 |
|                 | 4H   | 12.51            | 13.00 | 13.58 | 14.07 | 15.51 | 8.44           | 8.94 | 9.51  | 10.00 | 11.45 |
|                 | 6H   | 13.01            | 13.44 | 14.09 | 14.52 | 15.96 | 8.85           | 9.28 | 9.93  | 10.36 | 11.80 |
|                 | 8H   | 13.18            | 13.58 | 14.26 | 14.66 | 16.11 | 8.98           | 9.37 | 10.06 | 10.45 | 11.91 |
|                 | 12H  | 13.27            | 13.63 | 14.37 | 14.72 | 16.18 | 9.04           | 9.39 | 10.13 | 10.49 | 11.95 |
| 8H              | 4H   | 12.47            | 12.87 | 13.55 | 13.95 | 15.40 | 8.71           | 9.11 | 9.79  | 10.19 | 11.64 |
|                 | 6H   | 13.02            | 13.35 | 14.13 | 14.47 | 15.93 | 9.22           | 9.55 | 10.32 | 10.67 | 12.12 |
|                 | 8H   | 13.23            | 13.52 | 14.34 | 14.62 | 16.10 | 9.41           | 9.69 | 10.52 | 10.80 | 12.27 |
|                 | 12H  | 13.36            | 13.62 | 14.48 | 14.71 | 16.23 | 9.52           | 9.77 | 10.63 | 10.87 | 12.38 |
| 12H             | 4H   | 12.42            | 12.78 | 13.52 | 13.87 | 15.33 | 8.71           | 9.07 | 9.81  | 10.16 | 11.62 |
|                 | 6H   | 13.00            | 13.29 | 14.11 | 14.39 | 15.86 | 9.27           | 9.55 | 10.38 | 10.66 | 12.13 |
|                 | 8H   | 13.21            | 13.46 | 14.32 | 14.56 | 16.07 | 9.47           | 9.72 | 10.58 | 10.82 | 12.33 |

END OF REPORT