

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: P920459

Luminaire Tested: DFN2DIP-SQ4F0-100D080US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920459  
REPORT IS A COMBINATION OF REPORTS P901624 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D080US935-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

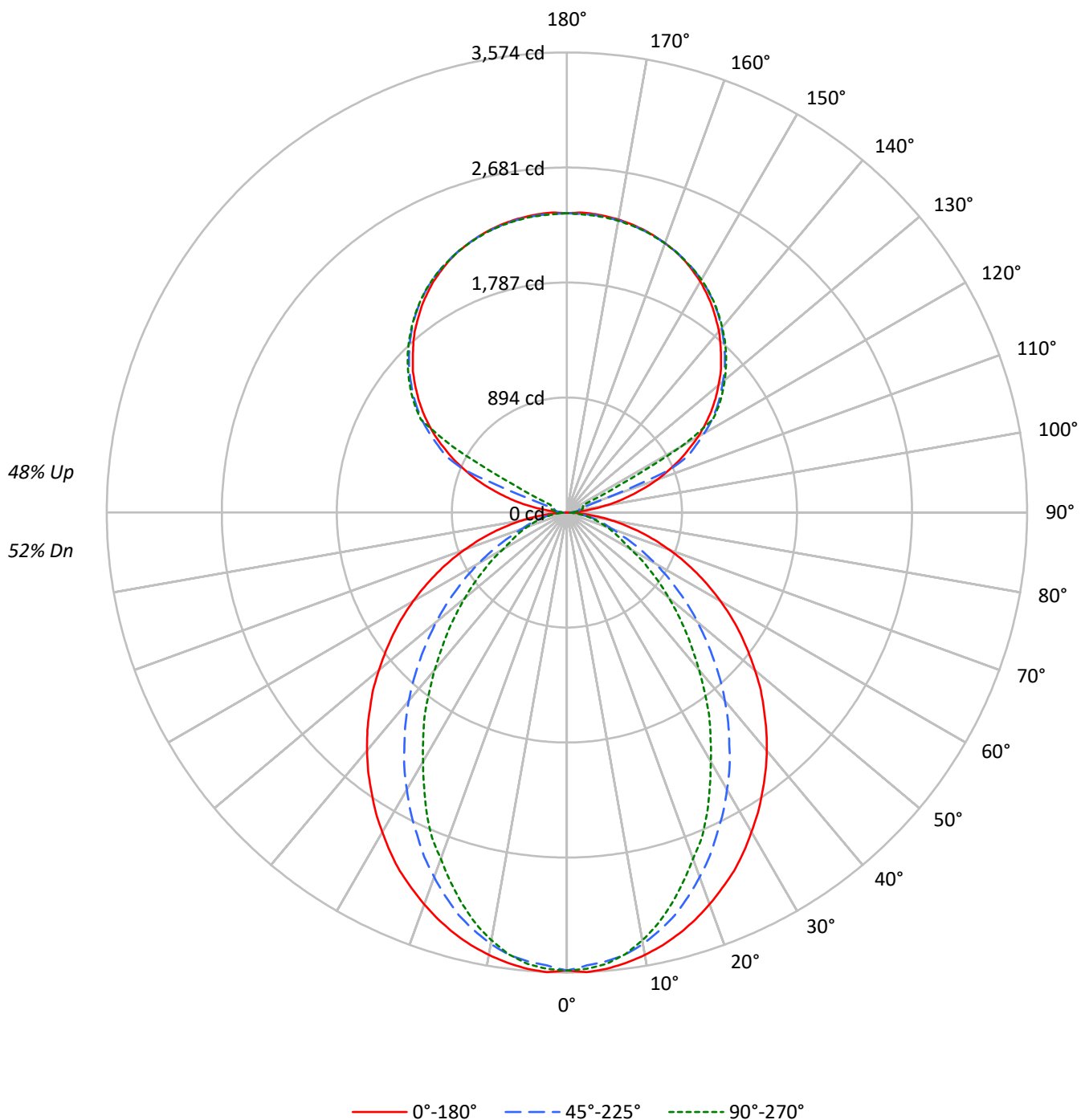
Lumens per Lamp: N/A  
Luminaire Lumens: 14137.6 lumens  
Efficiency: N/A  
Efficacy: 92.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 152.2  
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   | 108 | 108 | 108 | 108 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 58 | 58 | 58 |
| 1   | 99  | 95  | 91  | 87  | 91 | 88 | 84 | 82 | 75 | 72 | 70 | 63 | 61 | 60 | 52 | 51 | 50 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 68 | 66 | 62 | 59 | 56 | 53 | 51 | 46 | 44 | 43 |
| 3   | 83  | 74  | 66  | 61  | 76 | 68 | 62 | 57 | 59 | 54 | 50 | 50 | 46 | 43 | 41 | 39 | 37 |
| 4   | 76  | 65  | 58  | 52  | 70 | 61 | 54 | 49 | 52 | 47 | 43 | 45 | 41 | 38 | 37 | 35 | 32 |
| 5   | 70  | 59  | 51  | 45  | 64 | 55 | 48 | 42 | 47 | 42 | 38 | 40 | 36 | 33 | 34 | 31 | 28 |
| 6   | 65  | 53  | 45  | 39  | 60 | 49 | 42 | 37 | 43 | 37 | 33 | 37 | 32 | 29 | 31 | 28 | 25 |
| 7   | 60  | 48  | 40  | 35  | 55 | 45 | 38 | 33 | 39 | 33 | 29 | 33 | 29 | 26 | 28 | 25 | 23 |
| 8   | 56  | 44  | 36  | 31  | 51 | 41 | 34 | 29 | 36 | 30 | 26 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 52  | 40  | 32  | 28  | 48 | 37 | 31 | 26 | 33 | 27 | 24 | 28 | 24 | 21 | 24 | 21 | 19 |
| 10  | 48  | 37  | 30  | 25  | 45 | 34 | 28 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2497 | 2497 | 2497 |
| 5°  | 2501 | 2458 | 2474 |
| 10° | 2476 | 2410 | 2394 |
| 15° | 2442 | 2331 | 2270 |
| 20° | 2397 | 2222 | 2118 |
| 25° | 2351 | 2099 | 1971 |
| 30° | 2289 | 1973 | 1784 |
| 35° | 2228 | 1838 | 1620 |
| 40° | 2166 | 1698 | 1432 |
| 45° | 2094 | 1542 | 1262 |
| 50° | 2020 | 1385 | 1095 |
| 55° | 1942 | 1217 | 935  |
| 60° | 1852 | 1042 | 770  |
| 65° | 1749 | 863  | 694  |
| 70° | 1624 | 697  | 630  |
| 75° | 1467 | 615  | 574  |
| 80° | 1239 | 518  | 501  |
| 85° | 863  | 348  | 381  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2094 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 333.5   | 2.4       |
| 10°-20°   | 915.5   | 6.5       |
| 20°-30°   | 1285.4  | 9.1       |
| 30°-40°   | 1401.2  | 9.9       |
| 40°-50°   | 1287.8  | 9.1       |
| 50°-60°   | 1011.4  | 7.2       |
| 60°-70°   | 658.3   | 4.7       |
| 70°-80°   | 338.9   | 2.4       |
| 80°-90°   | 90.6    | 0.6       |
| 90°-100°  | 76.7    | 0.5       |
| 100°-110° | 285.7   | 2.0       |
| 110°-120° | 757.9   | 5.4       |
| 120°-130° | 1256.9  | 8.9       |
| 130°-140° | 1335.2  | 9.4       |
| 140°-150° | 1240.9  | 8.8       |
| 150°-160° | 997.6   | 7.1       |
| 160°-170° | 642.8   | 4.5       |
| 170°-180° | 221.3   | 1.6       |
| 0°-30°    | 2534.4  | 17.9      |
| 0°-40°    | 3935.6  | 27.8      |
| 0°-60°    | 6234.8  | 44.1      |
| 0°-90°    | 7322.6  | 51.8      |
| 90°-120°  | 1120.2  | 7.9       |
| 90°-150°  | 4953.3  | 35.0      |
| 90°-180°  | 6815.0  | 48.2      |
| 0°-180°   | 14137.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3558 | 3558  | 3558 | 3558  | 3558 |      |
| 5°   | 3558 | 3542  | 3500 | 3530  | 3520 | 337  |
| 15°  | 3385 | 3349  | 3240 | 3178  | 3146 | 954  |
| 25°  | 3072 | 2969  | 2757 | 2625  | 2576 | 1413 |
| 35°  | 2647 | 2483  | 2200 | 1997  | 1926 | 1657 |
| 45°  | 2164 | 1948  | 1610 | 1381  | 1304 | 1671 |
| 55°  | 1646 | 1394  | 1046 | 854   | 792  | 1470 |
| 65°  | 1111 | 850   | 560  | 451   | 441  | 1102 |
| 75°  | 592  | 367   | 258  | 235   | 232  | 627  |
| 85°  | 138  | 71    | 61   | 61    | 61   | 159  |
| 90°  | 2    | 20    | 34   | 42    | 45   | 13   |
| 95°  | 109  | 54    | 66   | 74    | 72   | 129  |
| 105° | 511  | 562   | 103  | 121   | 128  | 546  |
| 115° | 967  | 996   | 1038 | 259   | 138  | 952  |
| 125° | 1367 | 1389  | 1421 | 1433  | 1438 | 1220 |
| 135° | 1692 | 1719  | 1734 | 1751  | 1748 | 1307 |
| 145° | 1963 | 1961  | 1990 | 2002  | 1993 | 1228 |
| 155° | 2161 | 2146  | 2167 | 2177  | 2163 | 996  |
| 165° | 2278 | 2268  | 2272 | 2284  | 2272 | 643  |
| 175° | 2330 | 2318  | 2321 | 2333  | 2316 | 222  |
| 180° | 2325 | 2325  | 2325 | 2325  | 2325 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3558.5 | 3558.5 | 3558.5 | 3558.5 | 3558.5 |
| 2.5°   | 3574.5 | 3558.5 | 3522.9 | 3555.4 | 3548.9 |
| 5°     | 3558.5 | 3542.4 | 3500.4 | 3529.5 | 3519.8 |
| 7.5°   | 3529.5 | 3510.3 | 3465.2 | 3477.8 | 3461.8 |
| 10°    | 3490.8 | 3468.3 | 3404.0 | 3394.1 | 3375.0 |
| 12.5°  | 3442.7 | 3413.6 | 3326.5 | 3307.4 | 3271.8 |
| 15°    | 3384.6 | 3349.0 | 3239.7 | 3178.5 | 3146.4 |
| 17.5°  | 3316.9 | 3265.3 | 3130.1 | 3059.3 | 3007.7 |
| 20°    | 3239.7 | 3175.1 | 3014.2 | 2933.9 | 2862.8 |
| 22.5°  | 3156.0 | 3081.9 | 2894.9 | 2785.7 | 2737.5 |
| 25°    | 3072.3 | 2969.2 | 2756.6 | 2624.7 | 2576.2 |
| 27.5°  | 2972.5 | 2862.8 | 2627.8 | 2476.4 | 2402.3 |
| 30°    | 2866.3 | 2743.6 | 2486.0 | 2322.0 | 2234.9 |
| 32.5°  | 2763.1 | 2614.8 | 2351.0 | 2157.7 | 2077.0 |
| 35°    | 2647.2 | 2482.9 | 2199.7 | 1996.7 | 1925.6 |
| 37.5°  | 2534.5 | 2357.2 | 2057.9 | 1835.5 | 1755.1 |
| 40°    | 2415.3 | 2222.2 | 1909.6 | 1681.0 | 1597.3 |
| 42.5°  | 2292.9 | 2086.9 | 1761.7 | 1523.2 | 1442.9 |
| 45°    | 2164.1 | 1948.2 | 1610.3 | 1381.4 | 1304.2 |
| 47.5°  | 2041.9 | 1813.3 | 1465.4 | 1236.5 | 1165.8 |
| 50°    | 1906.5 | 1677.9 | 1323.6 | 1101.2 | 1033.9 |
| 52.5°  | 1774.3 | 1532.7 | 1188.3 | 975.8  | 914.6  |
| 55°    | 1645.5 | 1394.4 | 1046.5 | 853.5  | 792.3  |
| 57.5°  | 1513.6 | 1255.9 | 921.2  | 740.7  | 689.1  |
| 60°    | 1378.3 | 1120.7 | 788.9  | 624.9  | 573.3  |
| 62.5°  | 1246.4 | 988.8  | 676.1  | 521.8  | 496.1  |
| 65°    | 1111.1 | 850.1  | 560.3  | 451.0  | 441.1  |
| 67.5°  | 982.3  | 721.3  | 451.0  | 396.0  | 386.4  |
| 70°    | 847.0  | 595.9  | 373.4  | 341.3  | 328.4  |
| 72.5°  | 718.2  | 479.7  | 312.3  | 286.6  | 280.2  |
| 75°    | 592.5  | 367.0  | 257.6  | 235.1  | 232.0  |
| 77.5°  | 467.1  | 260.7  | 202.9  | 189.9  | 183.5  |
| 80°    | 350.9  | 186.9  | 154.5  | 141.8  | 141.8  |
| 82.5°  | 244.6  | 125.7  | 106.2  | 99.8   | 99.8   |
| 85°    | 138.4  | 70.7   | 61.1   | 61.1   | 61.1   |
| 87.5°  | 51.6   | 25.7   | 25.7   | 22.6   | 22.6   |
| 90°    | 1.6    | 20.1   | 33.6   | 42.1   | 45.4   |
| 92.5°  | 42.1   | 35.4   | 40.4   | 43.7   | 45.4   |
| 95°    | 109.3  | 53.7   | 65.5   | 74.1   | 72.3   |
| 97.5°  | 196.7  | 58.9   | 85.7   | 90.9   | 92.5   |
| 100°   | 297.8  | 67.3   | 95.9   | 109.3  | 112.6  |
| 102.5° | 408.7  | 405.4  | 99.3   | 117.6  | 122.9  |
| 105°   | 511.3  | 561.9  | 102.6  | 121.1  | 127.9  |
| 107.5° | 630.8  | 672.7  | 106.1  | 124.4  | 131.2  |
| 110°   | 745.3  | 780.4  | 294.5  | 126.2  | 132.9  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 852.9  | 883.0  | 854.5  | 129.4  | 134.7  |
| 115°   | 967.2  | 995.7  | 1037.8 | 259.1  | 138.0  |
| 117.5° | 1066.4 | 1100.0 | 1128.8 | 888.0  | 447.5  |
| 120°   | 1177.5 | 1202.6 | 1233.0 | 1253.2 | 1026.1 |
| 122.5° | 1271.5 | 1298.6 | 1332.3 | 1342.3 | 1344.1 |
| 125°   | 1367.4 | 1389.4 | 1421.3 | 1433.1 | 1438.1 |
| 127.5° | 1454.9 | 1478.5 | 1503.9 | 1520.6 | 1522.2 |
| 130°   | 1537.4 | 1564.3 | 1582.8 | 1601.4 | 1599.7 |
| 132.5° | 1621.5 | 1643.5 | 1661.9 | 1677.1 | 1675.4 |
| 135°   | 1692.2 | 1719.2 | 1734.1 | 1751.2 | 1747.7 |
| 137.5° | 1766.2 | 1786.3 | 1803.3 | 1820.1 | 1815.1 |
| 140°   | 1838.4 | 1852.0 | 1870.4 | 1885.6 | 1877.1 |
| 142.5° | 1899.2 | 1910.9 | 1932.7 | 1946.1 | 1937.7 |
| 145°   | 1963.1 | 1961.3 | 1989.9 | 2001.6 | 1993.2 |
| 147.5° | 2018.4 | 2013.4 | 2041.9 | 2050.4 | 2043.8 |
| 150°   | 2072.3 | 2060.5 | 2087.5 | 2097.5 | 2089.1 |
| 152.5° | 2117.7 | 2104.3 | 2129.4 | 2139.7 | 2127.9 |
| 155°   | 2161.4 | 2146.5 | 2166.6 | 2176.6 | 2163.3 |
| 157.5° | 2196.7 | 2183.4 | 2198.6 | 2210.4 | 2196.7 |
| 160°   | 2227.1 | 2217.0 | 2227.1 | 2237.1 | 2225.3 |
| 162.5° | 2253.9 | 2243.9 | 2252.3 | 2264.1 | 2248.9 |
| 165°   | 2277.5 | 2267.5 | 2272.5 | 2284.2 | 2272.5 |
| 167.5° | 2296.0 | 2285.9 | 2291.0 | 2302.8 | 2287.7 |
| 170°   | 2311.3 | 2301.0 | 2304.5 | 2316.3 | 2301.0 |
| 172.5° | 2321.3 | 2311.3 | 2314.6 | 2326.4 | 2311.3 |
| 175°   | 2329.6 | 2317.8 | 2321.3 | 2333.0 | 2316.3 |
| 177.5° | 2333.0 | 2321.3 | 2323.0 | 2334.8 | 2319.6 |
| 180°   | 2324.6 | 2324.6 | 2324.6 | 2324.6 | 2324.6 |

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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 | 10.50            | 11.35 | 11.45 | 12.31 | 13.56 | 6.47           | 7.31  | 7.41  | 8.27  | 9.52  |
|                 | 3H   | 12.19            | 12.94 | 13.15 | 13.91 | 15.18 | 7.66           | 8.41  | 8.62  | 9.38  | 10.65 |
|                 | 4H   | 12.80            | 13.51 | 13.77 | 14.49 | 15.77 | 8.11           | 8.82  | 9.08  | 9.80  | 11.08 |
|                 | 6H   | 13.23            | 13.88 | 14.21 | 14.86 | 16.15 | 8.43           | 9.09  | 9.41  | 10.07 | 11.36 |
|                 | 8H   | 13.36            | 13.98 | 14.35 | 14.98 | 16.27 | 8.52           | 9.15  | 9.51  | 10.14 | 11.43 |
|                 | 12H  | 13.42            | 14.01 | 14.42 | 15.00 | 16.32 | 8.57           | 9.16  | 9.56  | 10.15 | 11.46 |
| 4H              | 2H   | 10.53            | 11.24 | 11.50 | 12.21 | 13.49 | 7.07           | 7.78  | 8.05  | 8.75  | 10.03 |
|                 | 3H   | 12.36            | 12.95 | 13.35 | 13.96 | 15.25 | 8.42           | 9.01  | 9.41  | 10.01 | 11.31 |
|                 | 4H   | 13.06            | 13.60 | 14.05 | 14.59 | 15.91 | 8.97           | 9.51  | 9.96  | 10.51 | 11.82 |
|                 | 6H   | 13.58            | 14.04 | 14.59 | 15.06 | 16.38 | 9.39           | 9.85  | 10.40 | 10.87 | 12.19 |
|                 | 8H   | 13.76            | 14.19 | 14.77 | 15.20 | 16.53 | 9.52           | 9.95  | 10.53 | 10.97 | 12.29 |
|                 | 12H  | 13.85            | 14.25 | 14.88 | 15.27 | 16.61 | 9.58           | 9.98  | 10.61 | 11.00 | 12.34 |
| 8H              | 4H   | 13.03            | 13.46 | 14.04 | 14.47 | 15.80 | 9.25           | 9.69  | 10.26 | 10.70 | 12.03 |
|                 | 6H   | 13.60            | 13.96 | 14.63 | 15.01 | 16.34 | 9.77           | 10.13 | 10.81 | 11.18 | 12.51 |
|                 | 8H   | 13.82            | 14.13 | 14.86 | 15.17 | 16.52 | 9.96           | 10.28 | 11.01 | 11.32 | 12.67 |
|                 | 12H  | 13.96            | 14.24 | 15.00 | 15.27 | 16.66 | 10.08          | 10.36 | 11.13 | 11.40 | 12.79 |
| 12H             | 4H   | 12.98            | 13.37 | 14.01 | 14.40 | 15.73 | 9.26           | 9.65  | 10.29 | 10.68 | 12.01 |
|                 | 6H   | 13.57            | 13.89 | 14.62 | 14.93 | 16.28 | 9.82           | 10.14 | 10.86 | 11.18 | 12.52 |
|                 | 8H   | 13.80            | 14.08 | 14.84 | 15.11 | 16.50 | 10.03          | 10.31 | 11.08 | 11.35 | 12.74 |

END OF REPORT