

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: P920011

Luminaire Tested: DFN2DIP-SQ3F0-040D110US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920011  
REPORT IS A COMBINATION OF REPORTS P901508 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D110US935-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

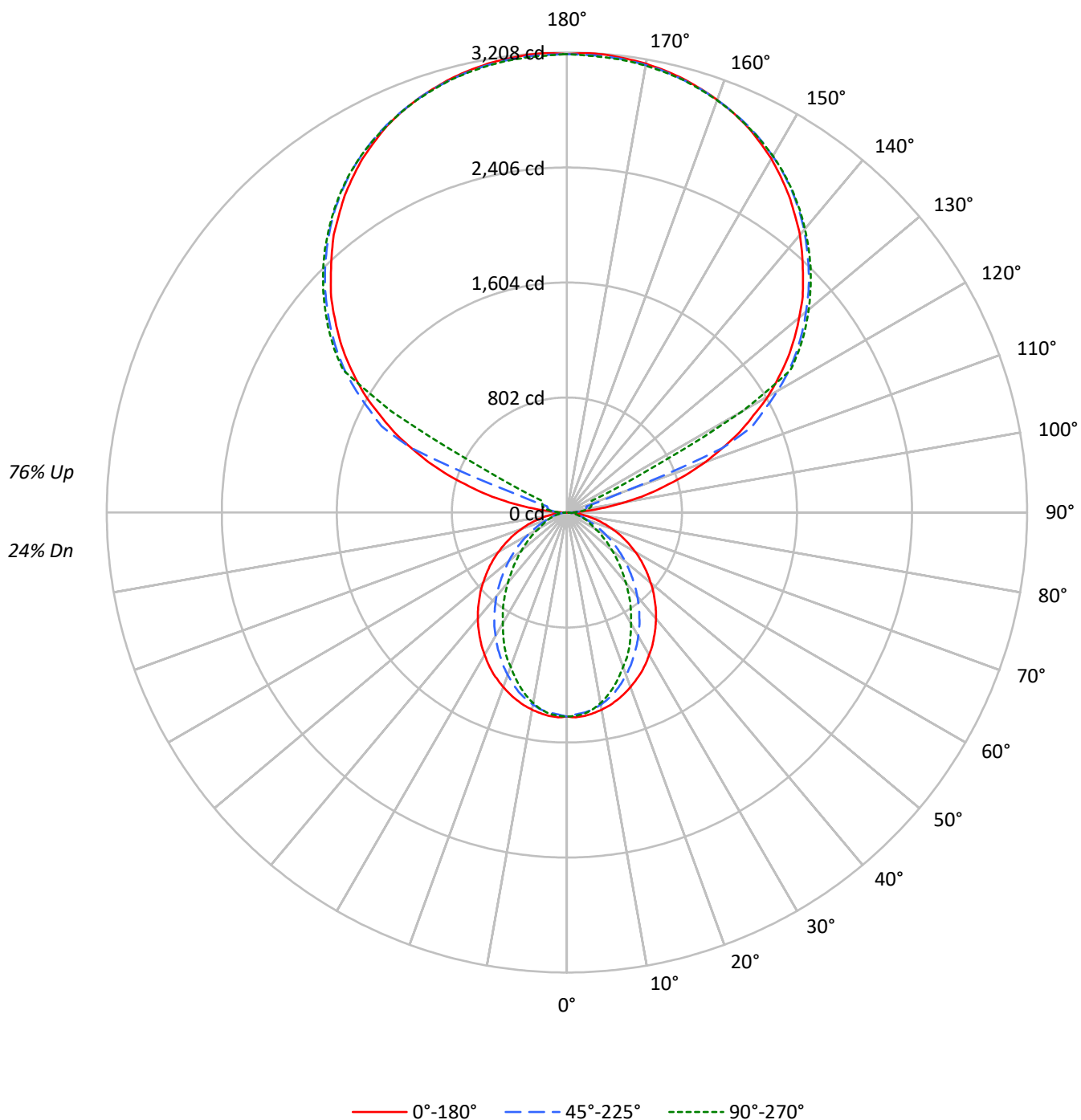
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12303.6 lumens  
Efficiency: N/A  
Efficacy: 104.1 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): 118.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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   | 101 | 101 | 101 | 101 | 90 | 90 | 90 | 90 | 69 | 69 | 69 | 50 | 50 | 50 | 32 | 32 | 32 |
| 1   | 92  | 88  | 84  | 81  | 82 | 78 | 75 | 73 | 60 | 58 | 57 | 44 | 43 | 42 | 29 | 28 | 27 |
| 2   | 84  | 77  | 71  | 67  | 75 | 69 | 64 | 60 | 53 | 50 | 47 | 39 | 37 | 35 | 25 | 24 | 23 |
| 3   | 77  | 68  | 61  | 56  | 68 | 61 | 55 | 50 | 47 | 43 | 40 | 34 | 32 | 30 | 23 | 21 | 20 |
| 4   | 70  | 60  | 53  | 47  | 62 | 54 | 48 | 43 | 42 | 38 | 34 | 31 | 28 | 26 | 20 | 19 | 18 |
| 5   | 64  | 53  | 46  | 40  | 57 | 48 | 41 | 37 | 37 | 33 | 29 | 28 | 25 | 22 | 19 | 17 | 15 |
| 6   | 59  | 48  | 40  | 35  | 53 | 43 | 36 | 32 | 34 | 29 | 26 | 25 | 22 | 20 | 17 | 15 | 14 |
| 7   | 55  | 43  | 36  | 30  | 49 | 39 | 32 | 28 | 30 | 26 | 22 | 23 | 20 | 17 | 15 | 14 | 12 |
| 8   | 51  | 39  | 32  | 27  | 45 | 35 | 29 | 24 | 28 | 23 | 20 | 21 | 18 | 15 | 14 | 12 | 11 |
| 9   | 47  | 36  | 28  | 24  | 42 | 32 | 26 | 22 | 25 | 21 | 18 | 19 | 16 | 14 | 13 | 11 | 10 |
| 10  | 44  | 32  | 26  | 21  | 39 | 29 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 12 | 12 | 10 | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1631 | 1631 | 1631 |
| 5°  | 1633 | 1604 | 1615 |
| 10° | 1615 | 1571 | 1562 |
| 15° | 1592 | 1518 | 1480 |
| 20° | 1562 | 1446 | 1380 |
| 25° | 1530 | 1365 | 1283 |
| 30° | 1489 | 1282 | 1161 |
| 35° | 1448 | 1192 | 1053 |
| 40° | 1407 | 1100 | 930  |
| 45° | 1358 | 998  | 819  |
| 50° | 1308 | 894  | 709  |
| 55° | 1256 | 785  | 605  |
| 60° | 1196 | 670  | 498  |
| 65° | 1126 | 553  | 447  |
| 70° | 1042 | 444  | 404  |
| 75° | 935  | 389  | 366  |
| 80° | 781  | 323  | 316  |
| 85° | 530  | 211  | 235  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2188 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 133.4   | 1.1       |
| 10°-20°   | 366.2   | 3.0       |
| 20°-30°   | 514.2   | 4.2       |
| 30°-40°   | 560.5   | 4.6       |
| 40°-50°   | 515.1   | 4.2       |
| 50°-60°   | 404.5   | 3.3       |
| 60°-70°   | 263.3   | 2.1       |
| 70°-80°   | 135.6   | 1.1       |
| 80°-90°   | 40.2    | 0.3       |
| 90°-100°  | 105.4   | 0.9       |
| 100°-110° | 392.9   | 3.2       |
| 110°-120° | 1042.0  | 8.5       |
| 120°-130° | 1728.3  | 14.0      |
| 130°-140° | 1835.9  | 14.9      |
| 140°-150° | 1706.2  | 13.9      |
| 150°-160° | 1371.8  | 11.1      |
| 160°-170° | 883.9   | 7.2       |
| 170°-180° | 304.2   | 2.5       |
| 0°-30°    | 1013.8  | 8.2       |
| 0°-40°    | 1574.2  | 12.8      |
| 0°-60°    | 2493.9  | 20.3      |
| 0°-90°    | 2933.0  | 23.8      |
| 90°-120°  | 1540.3  | 12.5      |
| 90°-150°  | 6810.7  | 55.4      |
| 90°-180°  | 9371.0  | 76.2      |
| 0°-180°   | 12303.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1423 | 1423  | 1423 | 1423  | 1423 |      |
| 5°   | 1423 | 1417  | 1400 | 1412  | 1408 | 135  |
| 15°  | 1354 | 1340  | 1296 | 1271  | 1259 | 382  |
| 25°  | 1229 | 1188  | 1103 | 1050  | 1030 | 565  |
| 35°  | 1059 | 993   | 880  | 799   | 770  | 663  |
| 45°  | 866  | 779   | 644  | 553   | 522  | 668  |
| 55°  | 658  | 558   | 419  | 341   | 317  | 588  |
| 65°  | 444  | 340   | 224  | 180   | 176  | 441  |
| 75°  | 237  | 147   | 103  | 94    | 93   | 251  |
| 85°  | 55   | 28    | 24   | 24    | 24   | 64   |
| 90°  | 2    | 28    | 46   | 58    | 62   | 11   |
| 95°  | 150  | 74    | 90   | 102   | 99   | 178  |
| 105° | 703  | 773   | 141  | 166   | 176  | 751  |
| 115° | 1330 | 1369  | 1427 | 356   | 190  | 1309 |
| 125° | 1880 | 1910  | 1954 | 1971  | 1978 | 1677 |
| 135° | 2327 | 2364  | 2384 | 2408  | 2403 | 1797 |
| 145° | 2699 | 2697  | 2736 | 2752  | 2741 | 1688 |
| 155° | 2972 | 2951  | 2979 | 2993  | 2974 | 1370 |
| 165° | 3132 | 3118  | 3125 | 3141  | 3125 | 885  |
| 175° | 3203 | 3187  | 3192 | 3208  | 3185 | 305  |
| 180° | 3196 | 3196  | 3196 | 3196  | 3196 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1423.4 | 1423.4 | 1423.4 | 1423.4 | 1423.4 |
| 2.5°   | 1429.9 | 1423.4 | 1409.2 | 1422.2 | 1419.5 |
| 5°     | 1423.4 | 1416.9 | 1400.2 | 1411.8 | 1408.0 |
| 7.5°   | 1411.8 | 1404.1 | 1386.1 | 1391.1 | 1384.7 |
| 10°    | 1396.4 | 1387.3 | 1361.6 | 1357.6 | 1350.0 |
| 12.5°  | 1377.1 | 1365.5 | 1330.6 | 1322.9 | 1308.7 |
| 15°    | 1353.8 | 1339.6 | 1295.9 | 1271.4 | 1258.6 |
| 17.5°  | 1326.8 | 1306.1 | 1252.0 | 1223.7 | 1203.1 |
| 20°    | 1295.9 | 1270.1 | 1205.7 | 1173.5 | 1145.1 |
| 22.5°  | 1262.4 | 1232.8 | 1158.0 | 1114.2 | 1095.0 |
| 25°    | 1228.9 | 1187.7 | 1102.6 | 1049.9 | 1030.4 |
| 27.5°  | 1189.0 | 1145.1 | 1051.1 | 990.6  | 960.9  |
| 30°    | 1146.5 | 1097.4 | 994.4  | 928.8  | 894.0  |
| 32.5°  | 1105.3 | 1045.9 | 940.4  | 863.1  | 830.8  |
| 35°    | 1058.9 | 993.2  | 879.9  | 798.7  | 770.2  |
| 37.5°  | 1013.8 | 942.9  | 823.1  | 734.2  | 702.1  |
| 40°    | 966.1  | 888.9  | 763.9  | 672.4  | 638.9  |
| 42.5°  | 917.1  | 834.7  | 704.6  | 609.2  | 577.1  |
| 45°    | 865.6  | 779.3  | 644.1  | 552.6  | 521.7  |
| 47.5°  | 816.7  | 725.3  | 586.2  | 494.6  | 466.3  |
| 50°    | 762.6  | 671.1  | 529.4  | 440.5  | 413.5  |
| 52.5°  | 709.7  | 613.1  | 475.4  | 390.3  | 365.8  |
| 55°    | 658.2  | 557.8  | 418.6  | 341.4  | 316.9  |
| 57.5°  | 605.5  | 502.4  | 368.4  | 296.3  | 275.7  |
| 60°    | 551.3  | 448.2  | 315.6  | 249.9  | 229.4  |
| 62.5°  | 498.6  | 395.5  | 270.4  | 208.7  | 198.5  |
| 65°    | 444.4  | 340.0  | 224.1  | 180.4  | 176.4  |
| 67.5°  | 393.0  | 288.5  | 180.4  | 158.4  | 154.5  |
| 70°    | 338.8  | 238.3  | 149.4  | 136.6  | 131.3  |
| 72.5°  | 287.3  | 191.9  | 124.9  | 114.7  | 112.1  |
| 75°    | 236.9  | 146.8  | 103.1  | 94.0   | 92.8   |
| 77.5°  | 186.8  | 104.3  | 81.2   | 76.0   | 73.4   |
| 80°    | 140.3  | 74.7   | 61.7   | 56.7   | 56.7   |
| 82.5°  | 97.9   | 50.3   | 42.5   | 39.9   | 39.9   |
| 85°    | 55.4   | 28.3   | 24.5   | 24.5   | 24.5   |
| 87.5°  | 20.7   | 10.2   | 10.2   | 9.0    | 9.0    |
| 90°    | 2.2    | 27.7   | 46.1   | 57.9   | 62.3   |
| 92.5°  | 57.9   | 48.6   | 55.4   | 60.2   | 62.3   |
| 95°    | 150.2  | 73.9   | 90.1   | 101.9  | 99.4   |
| 97.5°  | 270.5  | 81.0   | 117.8  | 124.9  | 127.2  |
| 100°   | 409.5  | 92.6   | 131.8  | 150.2  | 154.9  |
| 102.5° | 561.9  | 557.5  | 136.5  | 161.8  | 168.9  |
| 105°   | 703.1  | 772.6  | 141.2  | 166.4  | 175.8  |
| 107.5° | 867.4  | 925.0  | 145.9  | 171.1  | 180.5  |
| 110°   | 1024.7 | 1073.1 | 404.8  | 173.6  | 182.6  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1172.8 | 1214.2 | 1174.9 | 178.0  | 185.1  |
| 115°   | 1329.8 | 1369.1 | 1427.1 | 356.2  | 189.8  |
| 117.5° | 1466.4 | 1512.5 | 1552.0 | 1221.1 | 615.2  |
| 120°   | 1619.0 | 1653.6 | 1695.4 | 1723.1 | 1410.8 |
| 122.5° | 1748.4 | 1785.5 | 1831.9 | 1845.6 | 1848.1 |
| 125°   | 1880.2 | 1910.5 | 1954.4 | 1970.6 | 1977.5 |
| 127.5° | 2000.5 | 2032.9 | 2067.8 | 2090.8 | 2093.1 |
| 130°   | 2113.9 | 2151.0 | 2176.3 | 2201.8 | 2199.7 |
| 132.5° | 2229.6 | 2259.8 | 2285.1 | 2305.9 | 2303.8 |
| 135°   | 2326.8 | 2363.9 | 2384.4 | 2407.9 | 2403.1 |
| 137.5° | 2428.4 | 2456.2 | 2479.5 | 2502.6 | 2495.7 |
| 140°   | 2527.9 | 2546.5 | 2571.8 | 2592.6 | 2581.1 |
| 142.5° | 2611.3 | 2627.5 | 2657.5 | 2675.9 | 2664.4 |
| 145°   | 2699.2 | 2696.7 | 2736.0 | 2752.3 | 2740.7 |
| 147.5° | 2775.3 | 2768.5 | 2807.7 | 2819.3 | 2810.2 |
| 150°   | 2849.5 | 2833.3 | 2870.3 | 2884.1 | 2872.5 |
| 152.5° | 2911.8 | 2893.4 | 2928.0 | 2942.0 | 2925.8 |
| 155°   | 2972.0 | 2951.3 | 2979.1 | 2992.8 | 2974.4 |
| 157.5° | 3020.6 | 3002.1 | 3023.0 | 3039.2 | 3020.6 |
| 160°   | 3062.3 | 3048.3 | 3062.3 | 3076.0 | 3059.8 |
| 162.5° | 3099.1 | 3085.4 | 3096.9 | 3113.1 | 3092.3 |
| 165°   | 3131.5 | 3117.8 | 3124.6 | 3140.8 | 3124.6 |
| 167.5° | 3157.0 | 3143.1 | 3150.2 | 3166.4 | 3145.6 |
| 170°   | 3177.9 | 3163.9 | 3168.6 | 3184.8 | 3163.9 |
| 172.5° | 3191.6 | 3177.9 | 3182.6 | 3198.8 | 3177.9 |
| 175°   | 3203.2 | 3187.0 | 3191.6 | 3207.9 | 3184.8 |
| 177.5° | 3207.9 | 3191.6 | 3194.1 | 3210.3 | 3189.5 |
| 180°   | 3196.4 | 3196.4 | 3196.4 | 3196.4 | 3196.4 |

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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 | 5.65             | 6.31 | 6.81  | 7.45  | 9.05  | 1.61           | 2.27 | 2.77 | 3.41 | 5.01 |
|                 | 3H   | 7.31             | 7.90 | 8.48  | 9.05  | 10.66 | 2.78           | 3.37 | 3.95 | 4.52 | 6.13 |
|                 | 4H   | 7.91             | 8.46 | 9.08  | 9.61  | 11.24 | 3.22           | 3.77 | 4.39 | 4.92 | 6.55 |
|                 | 6H   | 8.32             | 8.83 | 9.50  | 9.98  | 11.61 | 3.52           | 4.04 | 4.70 | 5.19 | 6.82 |
|                 | 8H   | 8.44             | 8.92 | 9.62  | 10.09 | 11.71 | 3.61           | 4.09 | 4.79 | 5.26 | 6.88 |
|                 | 12H  | 8.49             | 8.95 | 9.68  | 10.11 | 11.76 | 3.64           | 4.10 | 4.83 | 5.26 | 6.91 |
| 4H              | 2H   | 5.65             | 6.20 | 6.83  | 7.35  | 8.97  | 2.18           | 2.74 | 3.36 | 3.89 | 5.51 |
|                 | 3H   | 7.45             | 7.92 | 8.64  | 9.09  | 10.73 | 3.51           | 3.97 | 4.69 | 5.15 | 6.78 |
|                 | 4H   | 8.13             | 8.56 | 9.32  | 9.72  | 11.38 | 4.05           | 4.47 | 5.23 | 5.63 | 7.29 |
|                 | 6H   | 8.64             | 9.00 | 9.83  | 10.19 | 11.83 | 4.45           | 4.81 | 5.64 | 6.00 | 7.64 |
|                 | 8H   | 8.80             | 9.14 | 9.99  | 10.32 | 11.98 | 4.57           | 4.91 | 5.76 | 6.09 | 7.75 |
|                 | 12H  | 8.89             | 9.20 | 10.09 | 10.39 | 12.05 | 4.62           | 4.93 | 5.83 | 6.12 | 7.78 |
| 8H              | 4H   | 8.09             | 8.43 | 9.28  | 9.60  | 11.26 | 4.31           | 4.65 | 5.50 | 5.83 | 7.49 |
|                 | 6H   | 8.64             | 8.92 | 9.85  | 10.14 | 11.80 | 4.81           | 5.09 | 6.02 | 6.31 | 7.97 |
|                 | 8H   | 8.85             | 9.10 | 10.07 | 10.29 | 11.97 | 5.00           | 5.24 | 6.21 | 6.44 | 8.11 |
|                 | 12H  | 8.98             | 9.20 | 10.20 | 10.39 | 12.10 | 5.10           | 5.32 | 6.32 | 6.51 | 8.22 |
| 12H             | 4H   | 8.03             | 8.34 | 9.24  | 9.53  | 11.19 | 4.31           | 4.61 | 5.51 | 5.80 | 7.46 |
|                 | 6H   | 8.62             | 8.86 | 9.83  | 10.06 | 11.73 | 4.86           | 5.10 | 6.07 | 6.30 | 7.98 |
|                 | 8H   | 8.83             | 9.04 | 10.04 | 10.23 | 11.94 | 5.06           | 5.27 | 6.27 | 6.46 | 8.17 |

END OF REPORT