

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: P920929

Luminaire Tested: DFN2DIP-TR4F0-040D080US935-RLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920929  
REPORT IS A COMBINATION OF REPORTS P901962 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-040D080US935-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

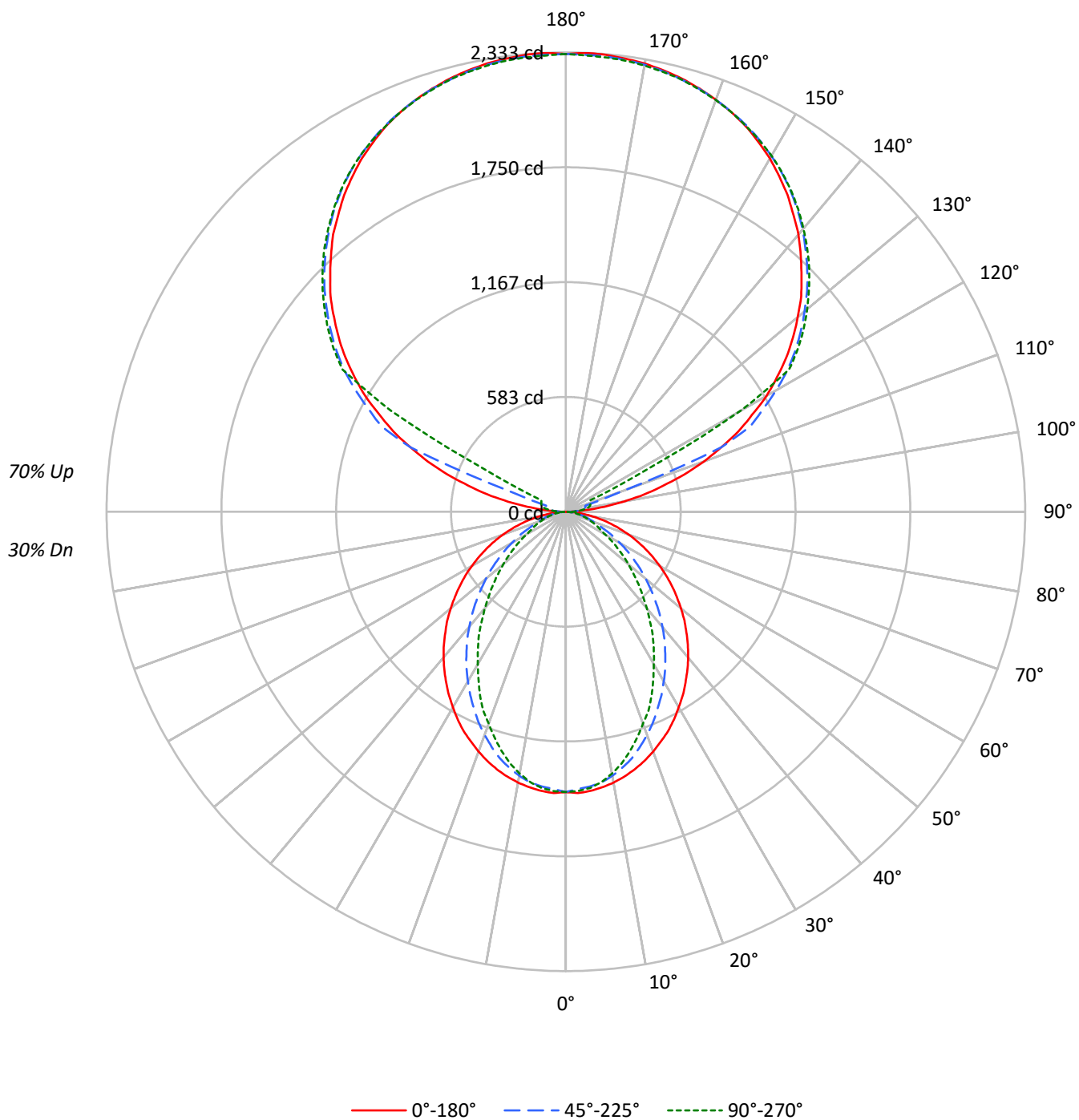
Lumens per Lamp: N/A  
Luminaire Lumens: 9746.5 lumens  
Efficiency: N/A  
Efficacy: 107.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 91.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 |
| 2   | 85  | 78  | 73  | 68  | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 |
| 4   | 71  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1131 | 1131 | 1131 |
| 5°  | 1133 | 1113 | 1120 |
| 10° | 1121 | 1091 | 1083 |
| 15° | 1106 | 1055 | 1027 |
| 20° | 1086 | 1005 | 958  |
| 25° | 1065 | 949  | 891  |
| 30° | 1037 | 892  | 807  |
| 35° | 1009 | 831  | 732  |
| 40° | 981  | 767  | 647  |
| 45° | 949  | 697  | 570  |
| 50° | 915  | 626  | 494  |
| 55° | 880  | 550  | 421  |
| 60° | 839  | 470  | 347  |
| 65° | 792  | 389  | 312  |
| 70° | 736  | 314  | 282  |
| 75° | 664  | 277  | 257  |
| 80° | 561  | 232  | 223  |
| 85° | 392  | 155  | 167  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1236 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 133.4  | 1.4       |
| 10°-20°   | 366.2  | 3.8       |
| 20°-30°   | 514.2  | 5.3       |
| 30°-40°   | 560.5  | 5.8       |
| 40°-50°   | 515.1  | 5.3       |
| 50°-60°   | 404.5  | 4.2       |
| 60°-70°   | 263.3  | 2.7       |
| 70°-80°   | 135.6  | 1.4       |
| 80°-90°   | 38.7   | 0.4       |
| 90°-100°  | 76.7   | 0.8       |
| 100°-110° | 285.7  | 2.9       |
| 110°-120° | 757.9  | 7.8       |
| 120°-130° | 1256.9 | 12.9      |
| 130°-140° | 1335.2 | 13.7      |
| 140°-150° | 1240.9 | 12.7      |
| 150°-160° | 997.6  | 10.2      |
| 160°-170° | 642.8  | 6.6       |
| 170°-180° | 221.3  | 2.3       |
| 0°-30°    | 1013.8 | 10.4      |
| 0°-40°    | 1574.2 | 16.2      |
| 0°-60°    | 2493.9 | 25.6      |
| 0°-90°    | 2931.5 | 30.1      |
| 90°-120°  | 1120.2 | 11.5      |
| 90°-150°  | 4953.3 | 50.8      |
| 90°-180°  | 6815.0 | 69.9      |
| 0°-180°   | 9746.5 | 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    | 20    | 34   | 42    | 45   | 9    |
| 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°     | 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°    | 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 | 5.35             | 6.04 | 6.46 | 7.15  | 8.68  | 1.32           | 2.01 | 2.44 | 3.12 | 4.65 |
|                 | 3H   | 7.01             | 7.63 | 8.14 | 8.75  | 10.30 | 2.50           | 3.12 | 3.62 | 4.23 | 5.78 |
|                 | 4H   | 7.62             | 8.20 | 8.75 | 9.32  | 10.87 | 2.94           | 3.53 | 4.08 | 4.65 | 6.20 |
|                 | 6H   | 8.03             | 8.57 | 9.17 | 9.69  | 11.25 | 3.26           | 3.80 | 4.40 | 4.92 | 6.48 |
|                 | 8H   | 8.15             | 8.66 | 9.30 | 9.80  | 11.36 | 3.35           | 3.86 | 4.49 | 4.99 | 6.55 |
|                 | 12H  | 8.21             | 8.70 | 9.36 | 9.82  | 11.40 | 3.39           | 3.87 | 4.53 | 5.00 | 6.58 |
| 4H              | 2H   | 5.35             | 5.93 | 6.49 | 7.05  | 8.60  | 1.90           | 2.48 | 3.04 | 3.60 | 5.15 |
|                 | 3H   | 7.17             | 7.65 | 8.31 | 8.79  | 10.36 | 3.24           | 3.72 | 4.38 | 4.87 | 6.43 |
|                 | 4H   | 7.85             | 8.30 | 9.00 | 9.43  | 11.02 | 3.78           | 4.23 | 4.93 | 5.36 | 6.95 |
|                 | 6H   | 8.36             | 8.74 | 9.51 | 9.90  | 11.47 | 4.19           | 4.58 | 5.35 | 5.73 | 7.31 |
|                 | 8H   | 8.53             | 8.89 | 9.69 | 10.03 | 11.63 | 4.32           | 4.68 | 5.47 | 5.82 | 7.42 |
|                 | 12H  | 8.62             | 8.94 | 9.79 | 10.10 | 11.70 | 4.38           | 4.70 | 5.55 | 5.86 | 7.46 |
| 8H              | 4H   | 7.81             | 8.17 | 8.96 | 9.31  | 10.91 | 4.05           | 4.41 | 5.20 | 5.55 | 7.15 |
|                 | 6H   | 8.37             | 8.66 | 9.54 | 9.85  | 11.44 | 4.56           | 4.86 | 5.74 | 6.05 | 7.64 |
|                 | 8H   | 8.59             | 8.84 | 9.77 | 10.01 | 11.62 | 4.76           | 5.01 | 5.94 | 6.18 | 7.79 |
|                 | 12H  | 8.72             | 8.94 | 9.90 | 10.11 | 11.75 | 4.87           | 5.10 | 6.05 | 6.26 | 7.90 |
| 12H             | 4H   | 7.75             | 8.08 | 8.93 | 9.24  | 10.83 | 4.05           | 4.37 | 5.22 | 5.53 | 7.13 |
|                 | 6H   | 8.34             | 8.60 | 9.52 | 9.77  | 11.38 | 4.61           | 4.87 | 5.79 | 6.04 | 7.65 |
|                 | 8H   | 8.56             | 8.78 | 9.74 | 9.95  | 11.59 | 4.82           | 5.04 | 6.00 | 6.21 | 7.85 |

END OF REPORT