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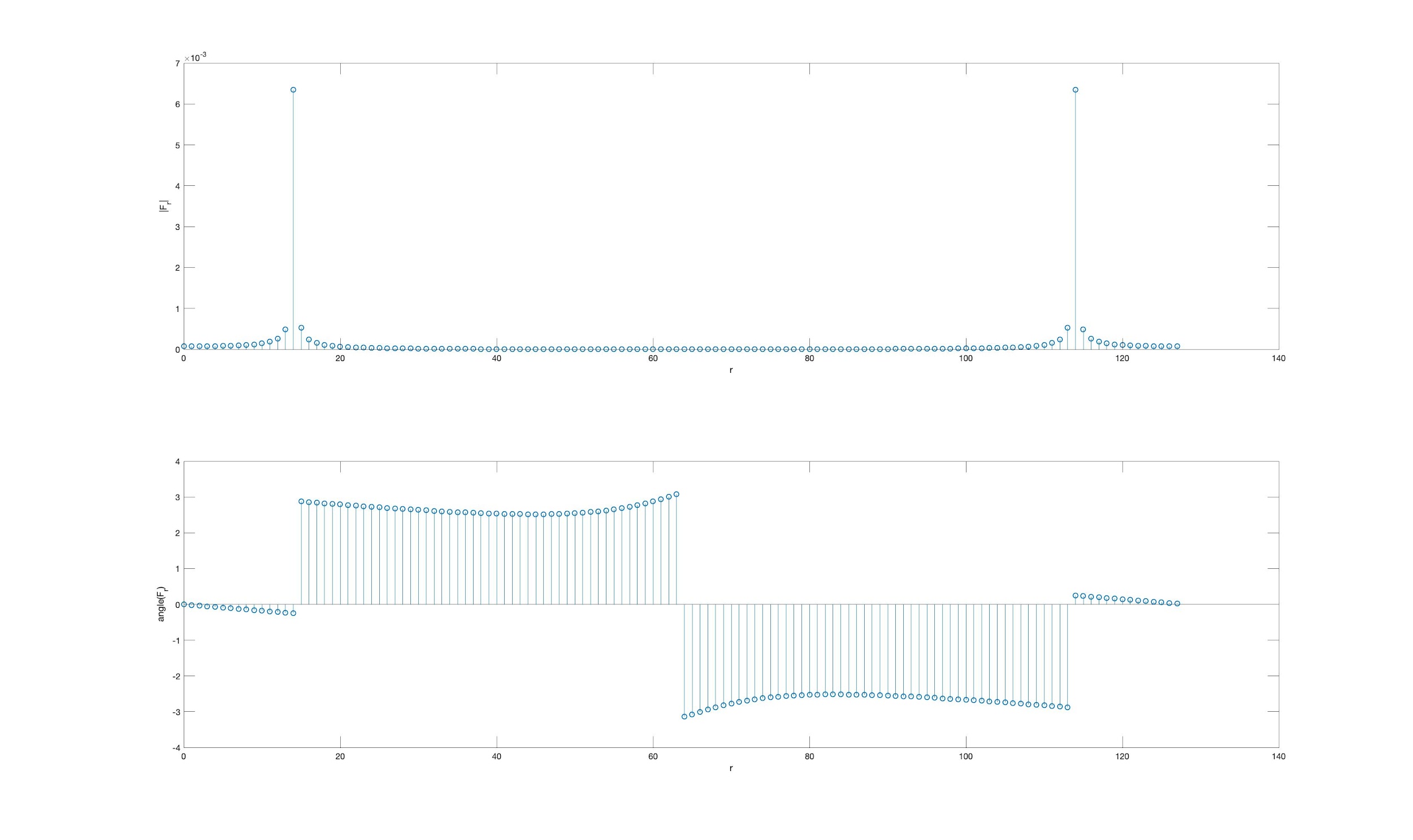
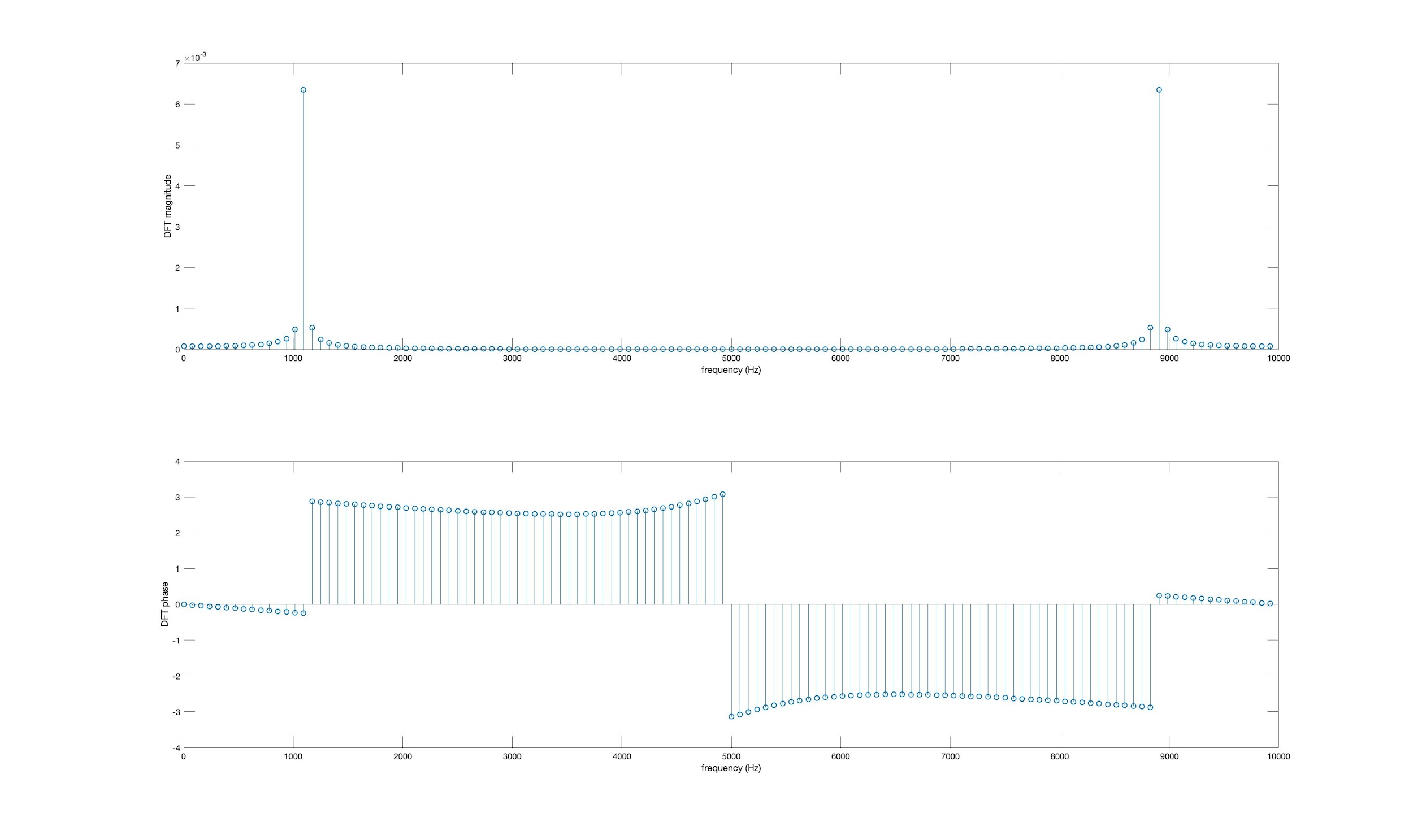
November 22, 2019

EENG310

Matlab Assignment 5

1. The m-file mydftloop.m is attached and clearly documented.

2. Figures (Numbered as they are in the assignment) from running the provided code are shown on the following page.

Figure 3.

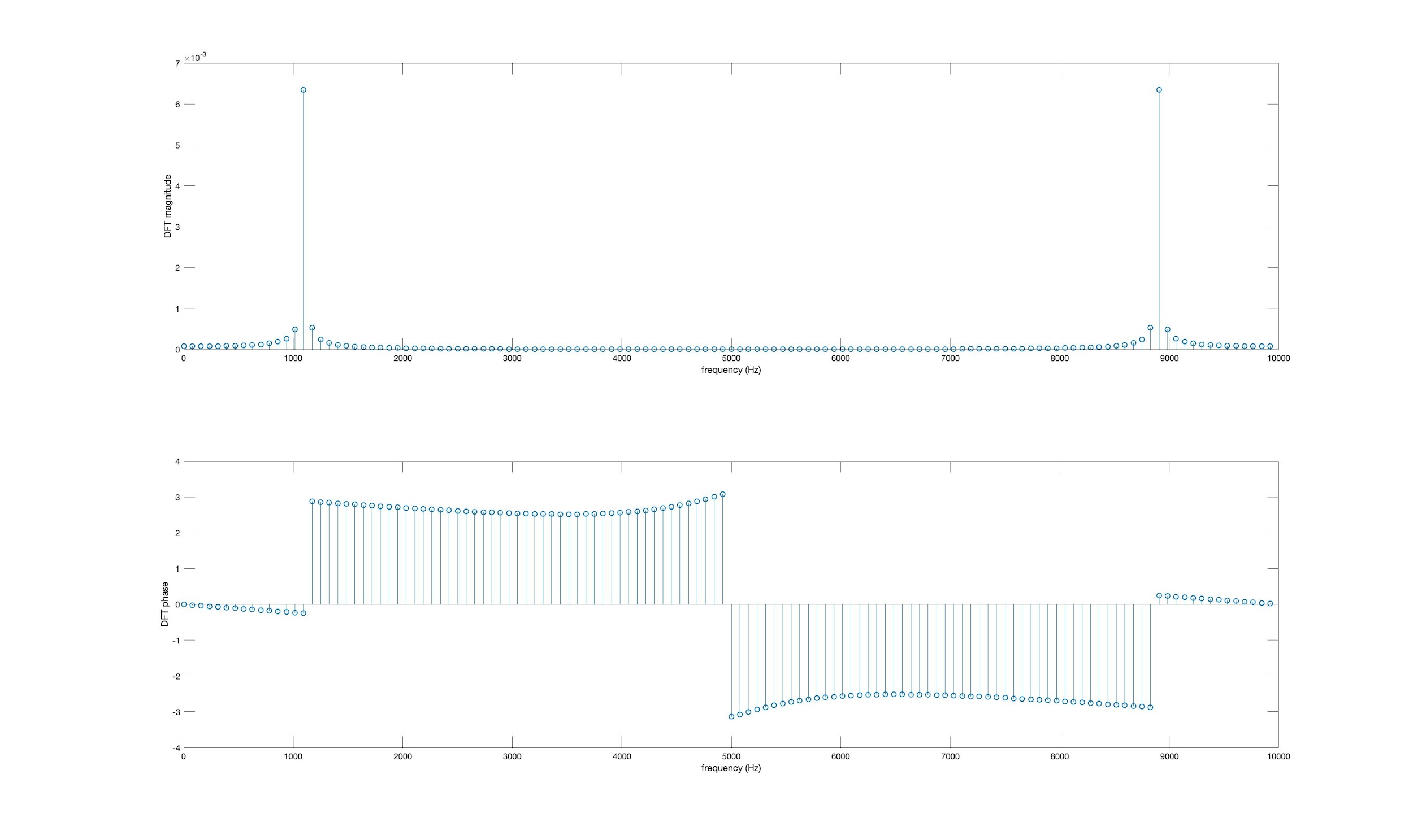
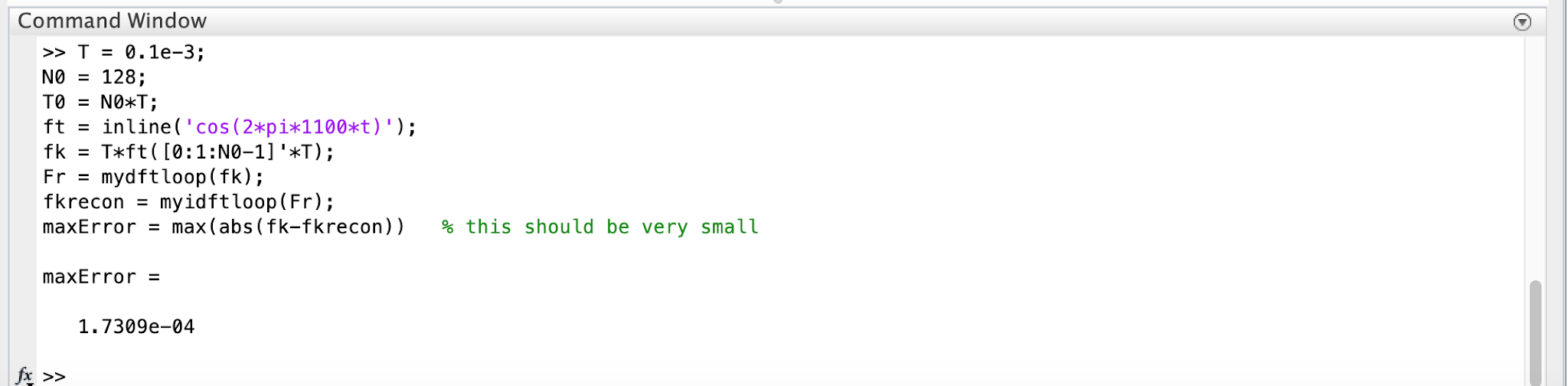


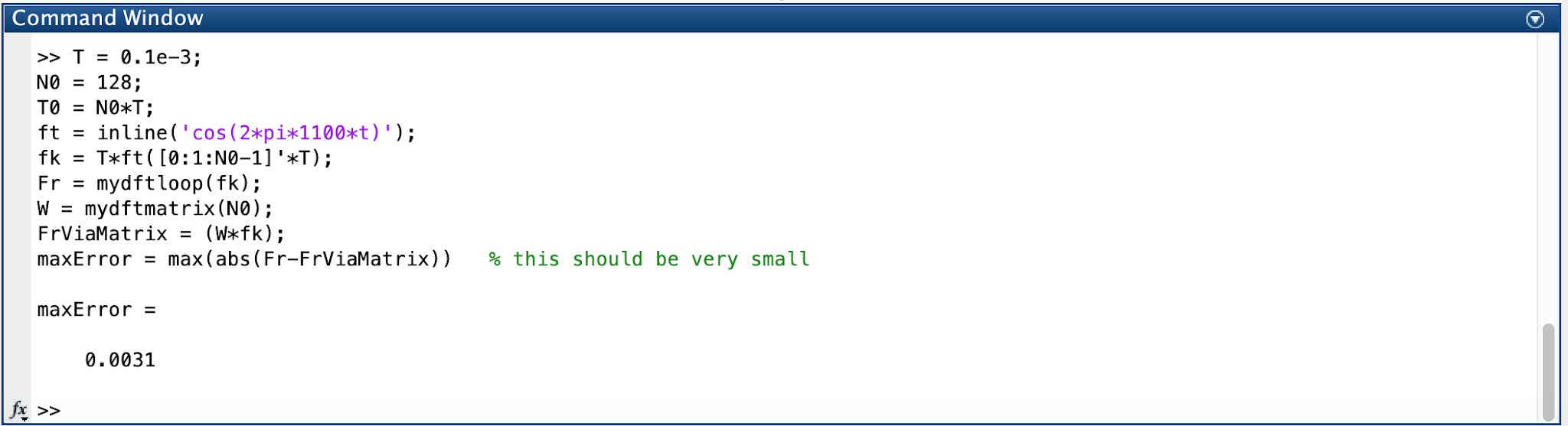
Figure 4.

4. Validation was done running the provided code as shown below:



5. The m-file mydftmatrix.m is attached and clearly documented. I did come across a function already implemented in matlab to design the matrix, although I did research the concept and why it was used on wikipedia before using this function.

6. Validation was done running the provided code as shown below:



7. The calculation times were compared between the methods using the code provided, however my results may have been skewed due to the “behind the scenes” working of the dftmtx() Matlab command. After reading the handout further, it became clear that the matrix multiplication method was actually the same complexity as the loop method(O(), and the fft() command proved to be the fastest method by using recursion (O(N log (N)). The plots from the provided code are on the following page. There was also some inconsistency in the program when ran several times these graphs changed slightly.

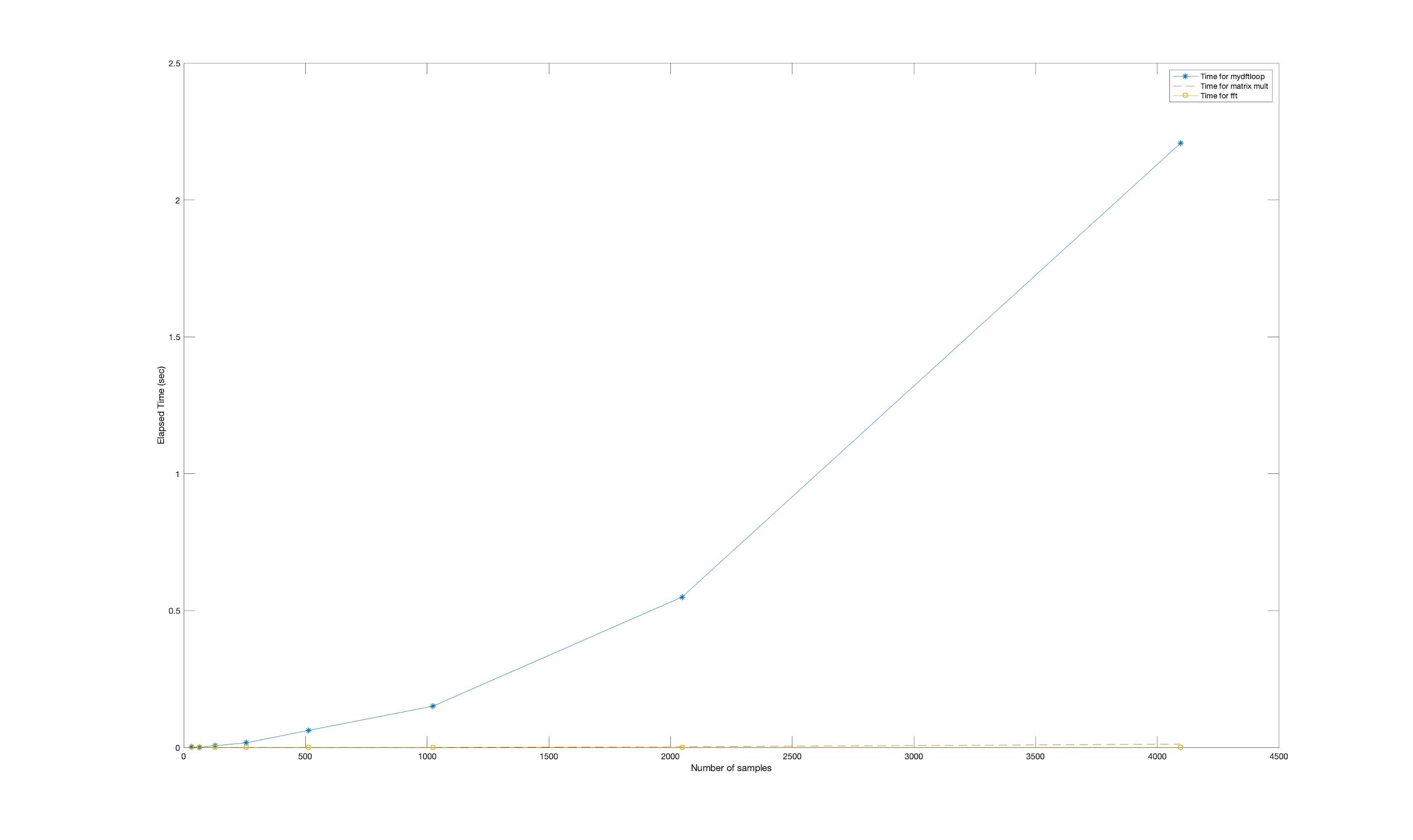


Figure 7.

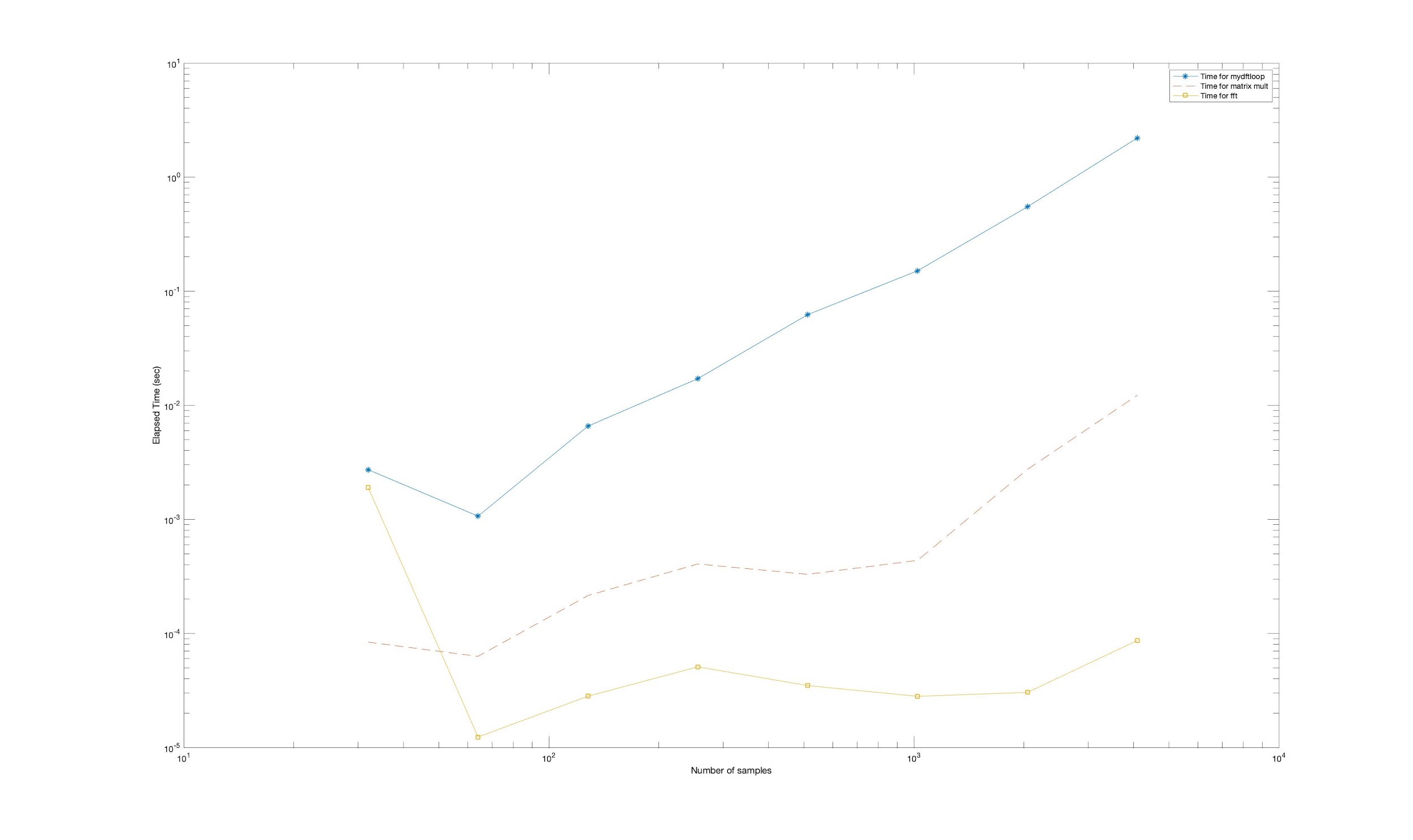


Figure 8.

8. I am not exactly sure what the question is wanting in terms of “in the style of figure 5”. I do see figure 5, but not all of the variables present are even variables in the plot? I have done my best to capture what I believe to be the spectral plot, shown below.

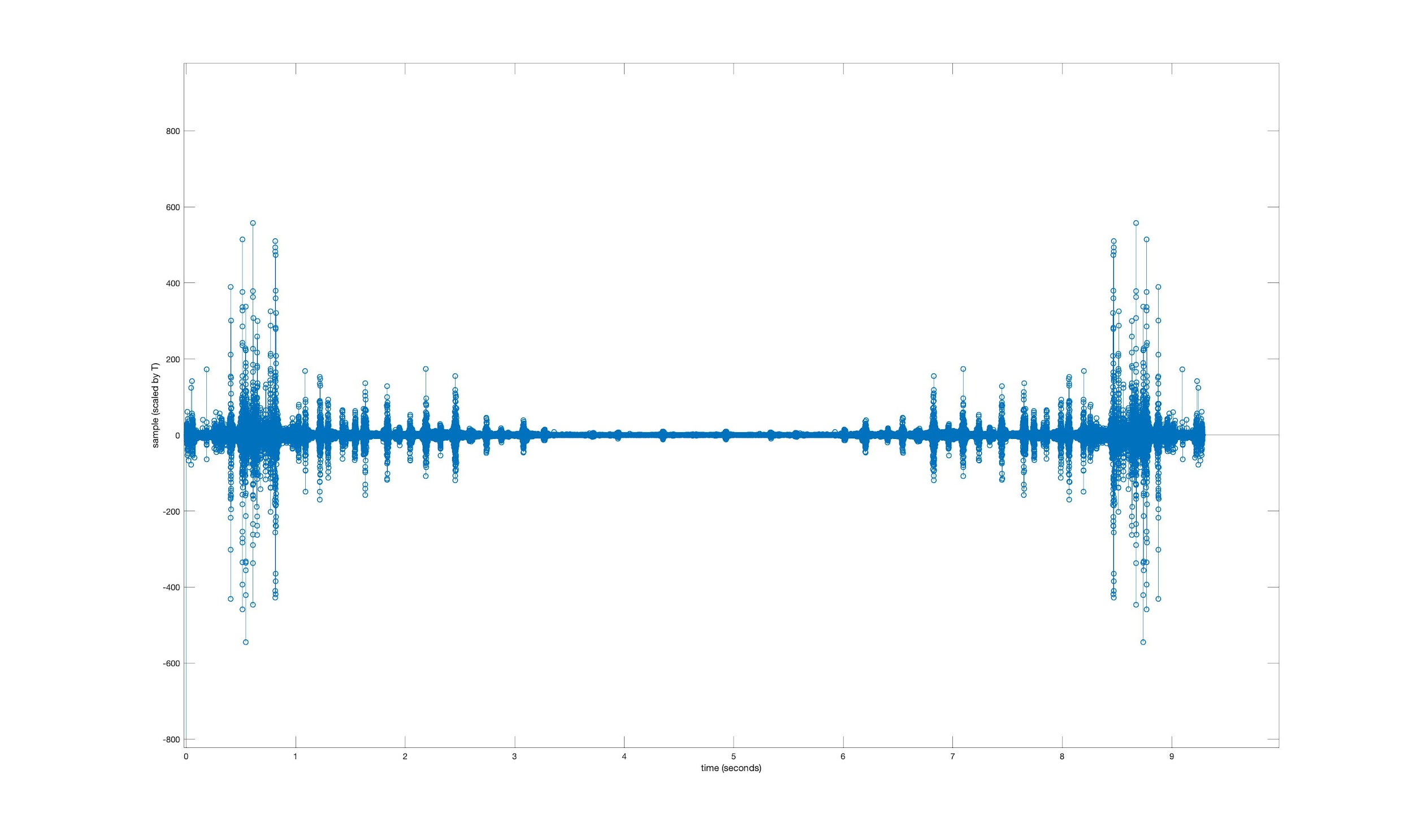


Figure 9.

9. I am not sure this is the expected graph or how to zoom into the frequencies in question. Are all of the frequencies not between |0-900|? However, if I progress through the spectrum and try to approximate the signal, I believe the notes to be:

F e d e e d c

(I am very, very confused on what exactly I am supposed to be evaluating here) This is at best an educated guess.