

---

```

clear all;
% Problem 2

% Read in file
[x,fs] = wavread('filtered_noise_response.wav');
n = length(x);

% Split into different bursts
for i=1:8
    y(i,:) = x(1+(i-1)/8*n:i/8*n);
    y2(i,:) = y(i,:).*y(i,:);
    e(i,:) = conv(y2(i,:),boxcar(8000));
    %     figure();
    %     semilogy(e(i,:));
end

% for first burst
start = [227300 224200 227000 220300 233000 216600 206600 198000 ];
finish = [233700 239500 271400 297000 340200 330900 276800 259800 ];

for i=1:length(start)
    X = start(i):finish(i);
    X_new = start(i):start(i)+2*(finish(i)-start(i));
    p = polyfit(X,e(i,X),50);
    Y = polyval(p,X_new);
    figure();
    time = (1:length(e(i,:)))/fs;
    semilogy(time,e(i,:));
    hold on;
    plot(X_new/fs,Y,'r');
end

% T60 by inspection of graphs
freq = [16000 8000 4000 2000 1000 500 250 125];
T60 = [0.3 0.7 1.15 1.25 1.65 1.67 2.0 1.8];

for i=1:8
    out = sprintf('Frequency: %i Hz T60 = %.2f s',freq(i),T60(i));
    disp(out)
end

```

```

Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Integer operands are required for colon operator when used as index
Warning: Polynomial is badly conditioned. Add points with distinct X
        values, reduce the degree of the polynomial, or try centering
        and scaling as described in HELP POLYFIT.
Warning: Polynomial is badly conditioned. Add points with distinct X
        values, reduce the degree of the polynomial, or try centering
        and scaling as described in HELP POLYFIT.
Warning: Negative data ignored
Warning: Negative data ignored
Warning: Polynomial is badly conditioned. Add points with distinct X
        values, reduce the degree of the polynomial, or try centering
        and scaling as described in HELP POLYFIT.

```

---

Warning: Polynomial is badly conditioned. Add points with distinct X values, reduce the degree of the polynomial, or try centering and scaling as described in HELP POLYFIT.

Warning: Negative data ignored

Warning: Negative data ignored

Warning: Polynomial is badly conditioned. Add points with distinct X values, reduce the degree of the polynomial, or try centering and scaling as described in HELP POLYFIT.

Warning: Negative data ignored

Warning: Negative data ignored

Warning: Polynomial is badly conditioned. Add points with distinct X values, reduce the degree of the polynomial, or try centering and scaling as described in HELP POLYFIT.

Warning: Negative data ignored

Warning: Negative data ignored

Warning: Polynomial is badly conditioned. Add points with distinct X values, reduce the degree of the polynomial, or try centering and scaling as described in HELP POLYFIT.

Warning: Negative data ignored

Warning: Negative data ignored

Warning: Polynomial is badly conditioned. Add points with distinct X values, reduce the degree of the polynomial, or try centering and scaling as described in HELP POLYFIT.

Warning: Negative data ignored

Warning: Negative data ignored

Frequency: 16000 Hz T60 = 0.30 s

Frequency: 8000 Hz T60 = 0.70 s

Frequency: 4000 Hz T60 = 1.15 s

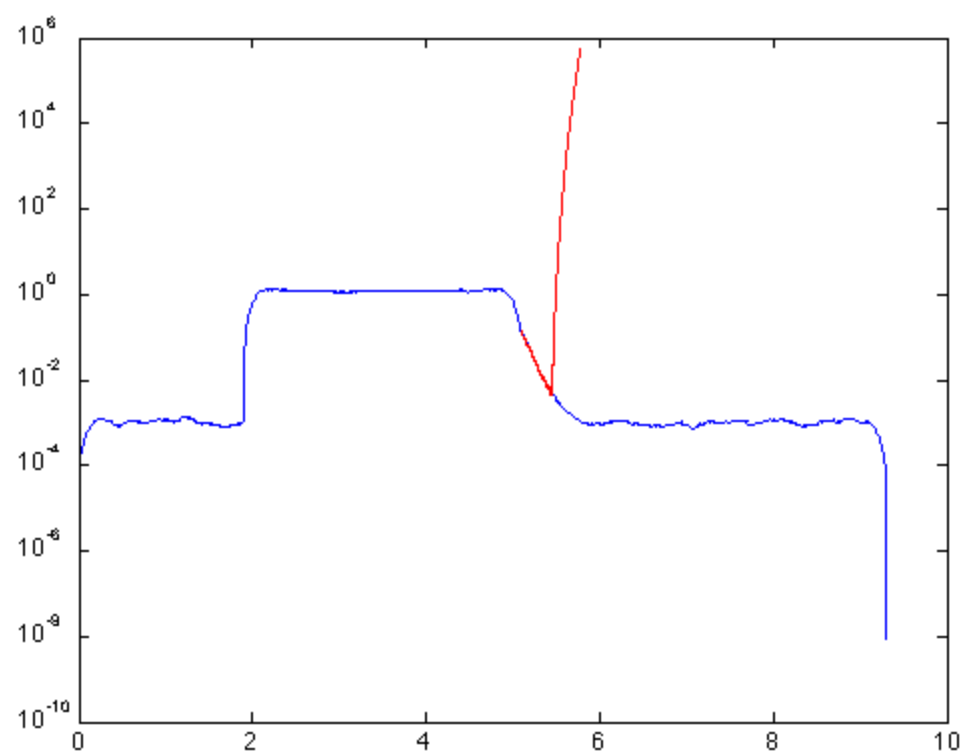
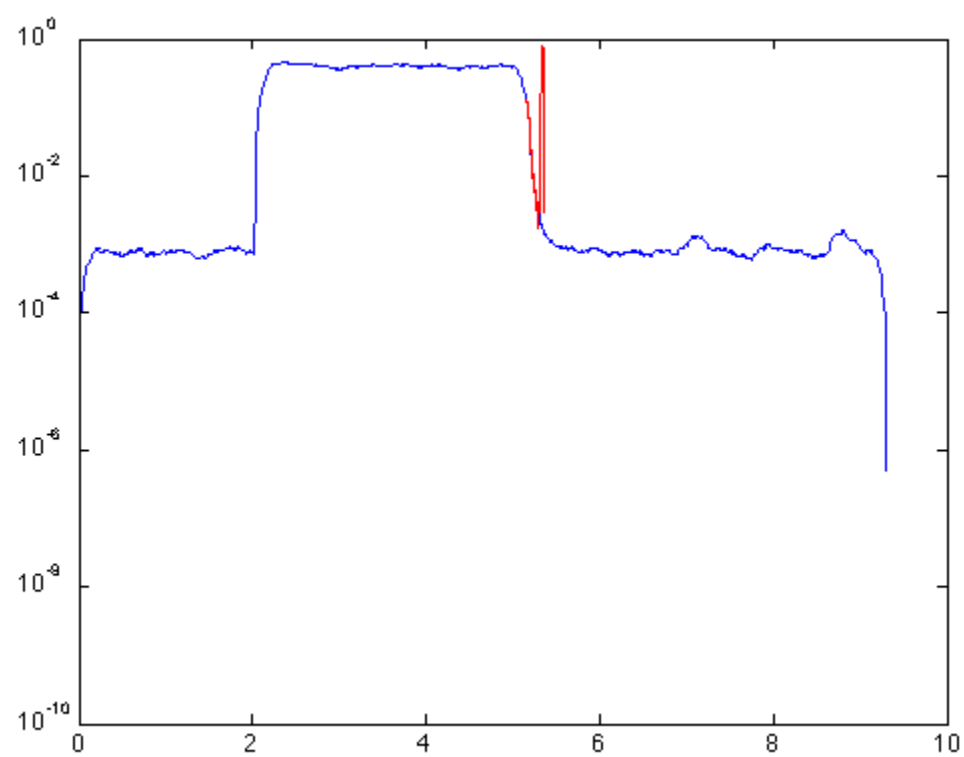
Frequency: 2000 Hz T60 = 1.25 s

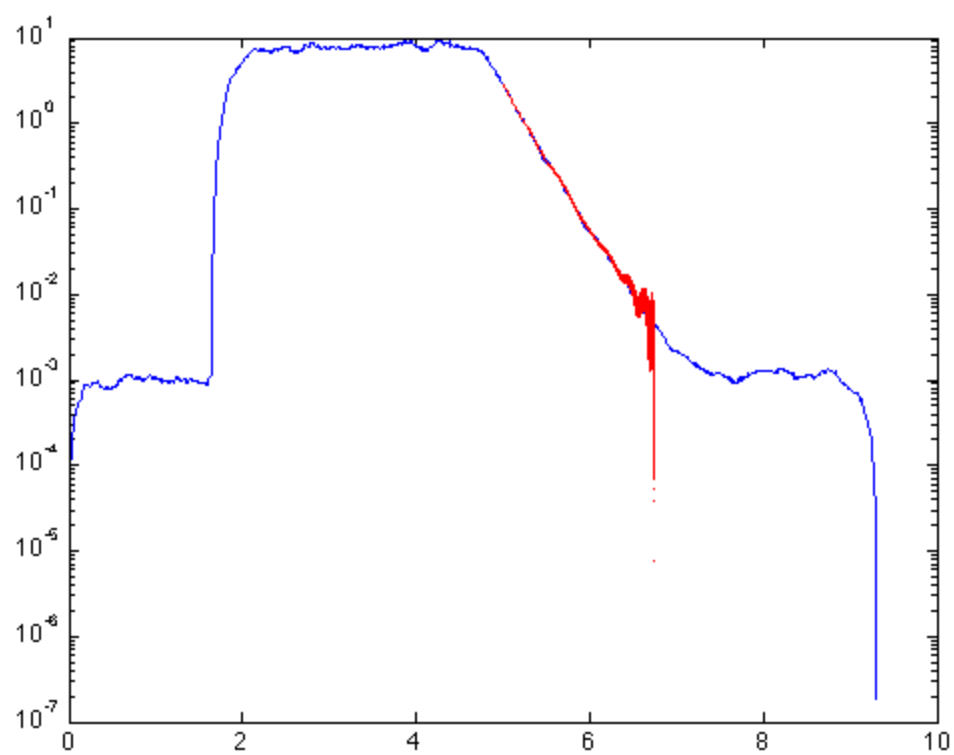
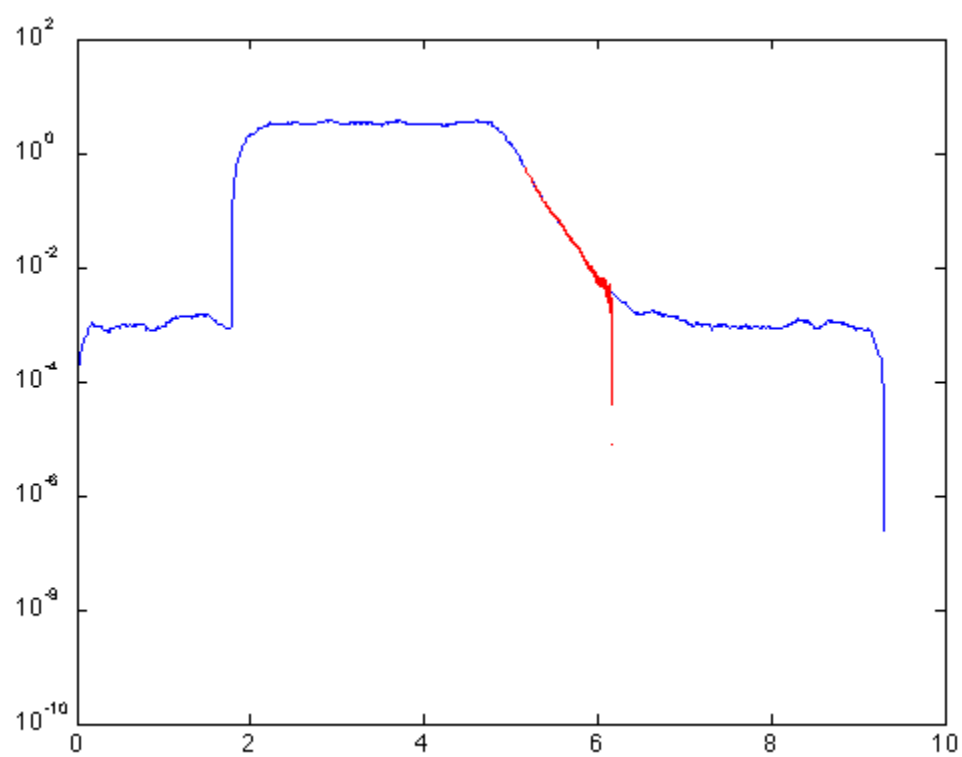
Frequency: 1000 Hz T60 = 1.65 s

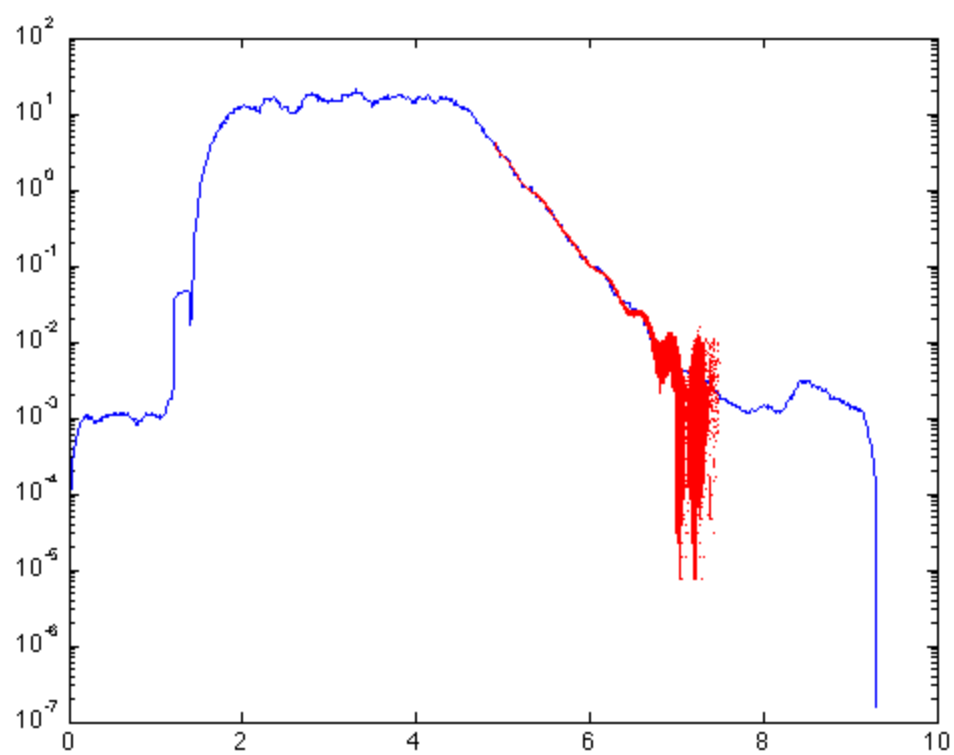
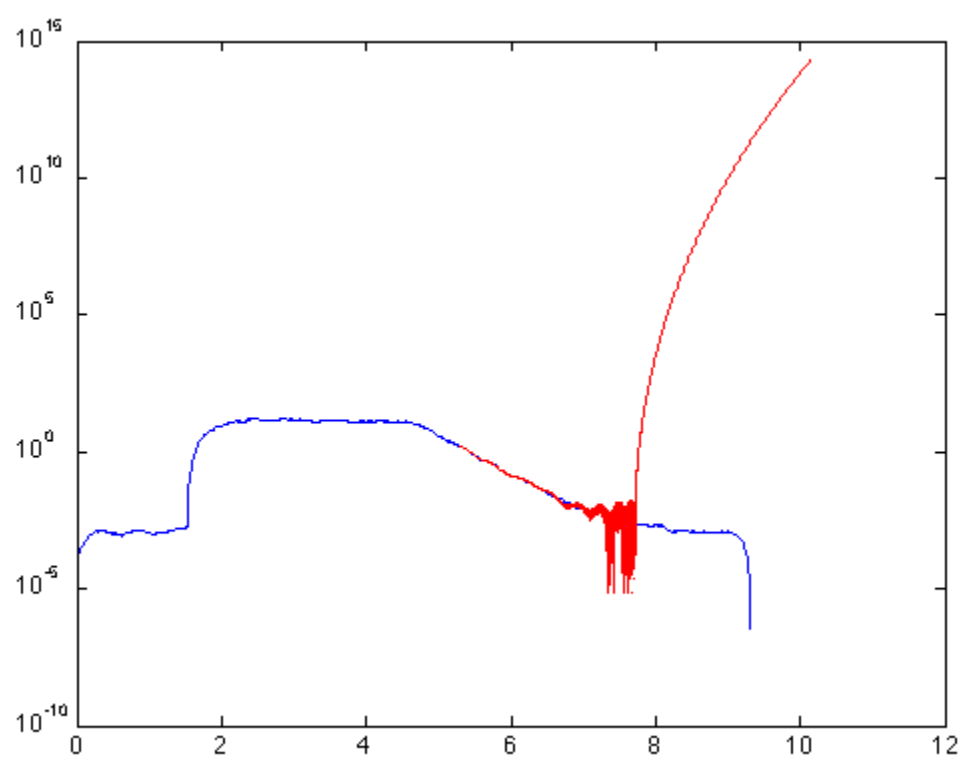
Frequency: 500 Hz T60 = 1.67 s

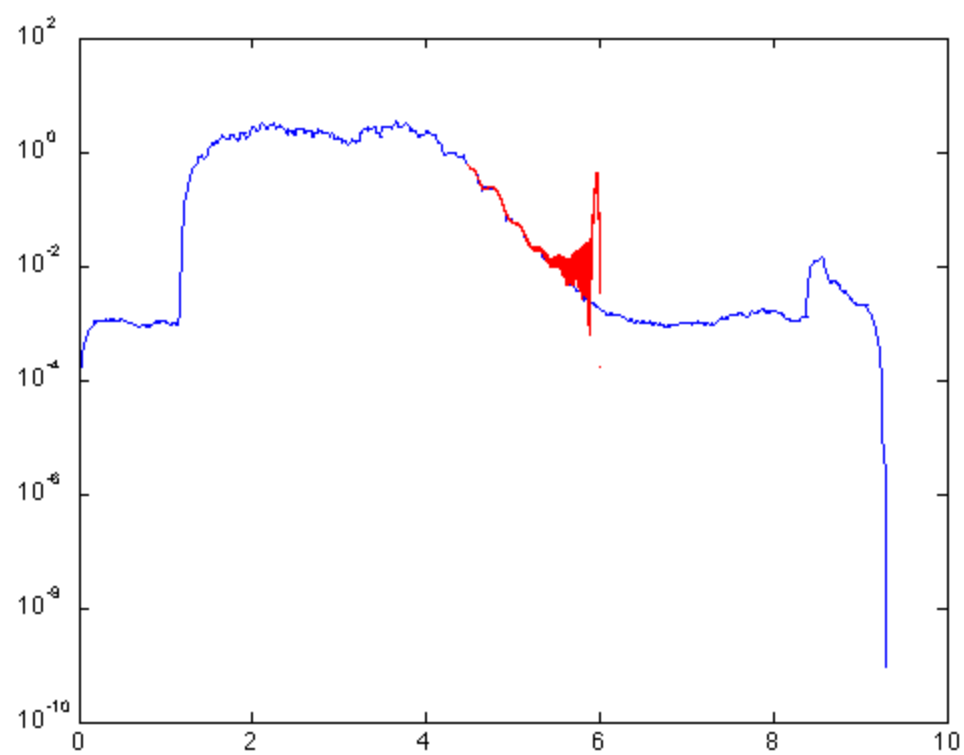
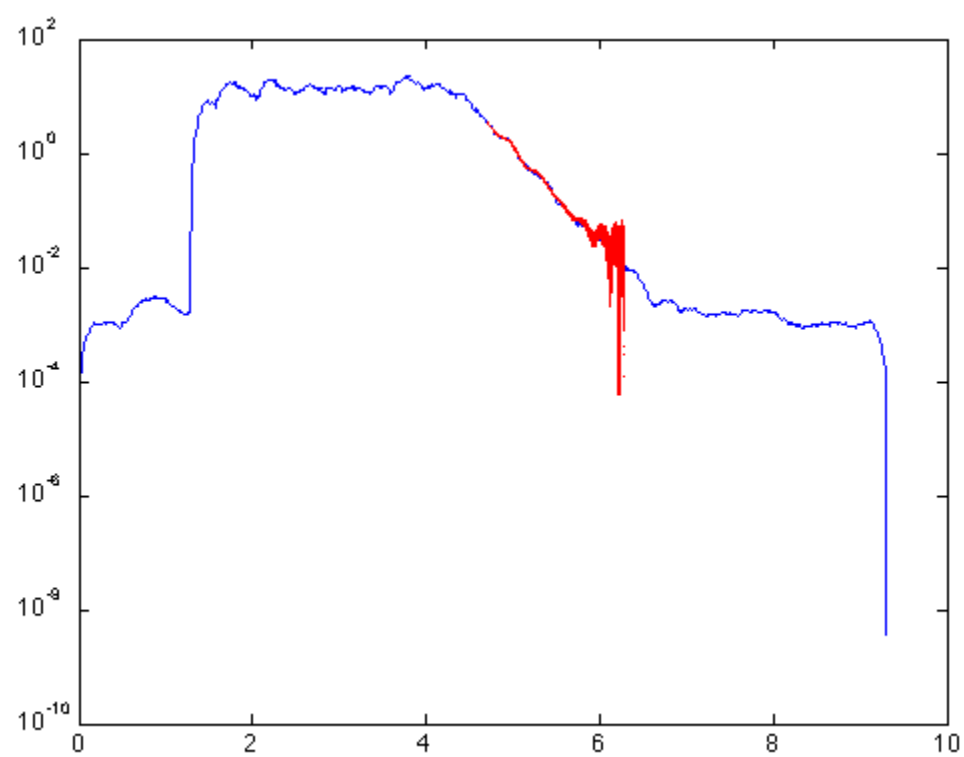
Frequency: 250 Hz T60 = 2.00 s

Frequency: 125 Hz T60 = 1.80 s









---

*Published with MATLAB® 7.10*