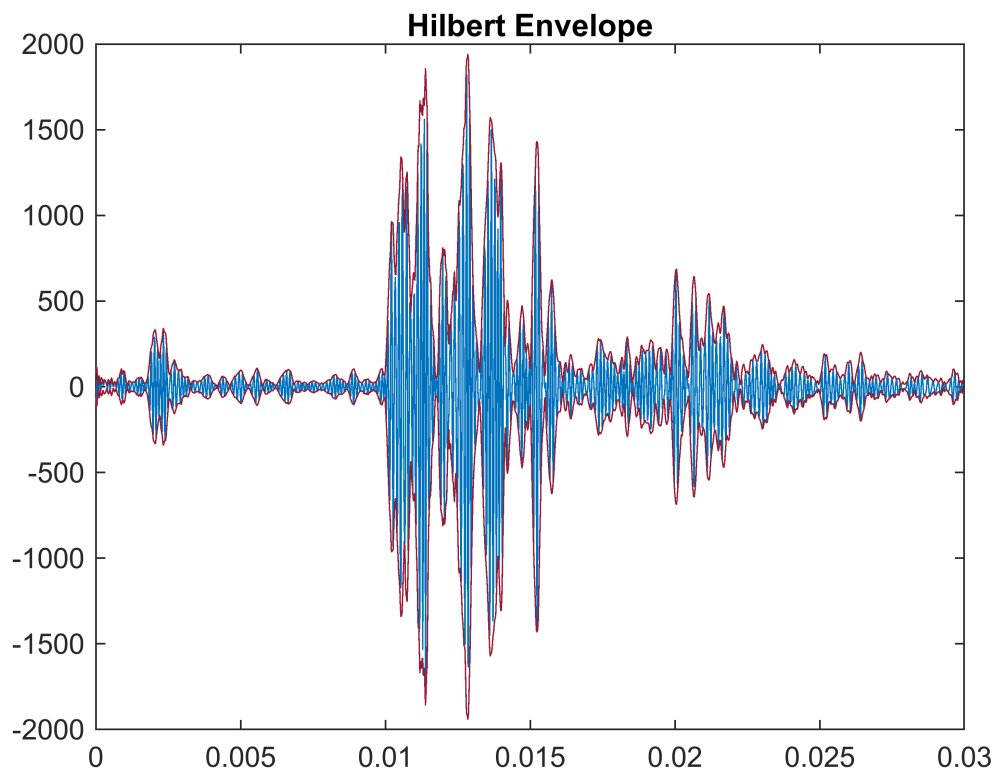```matlab
load("carotid.mat");
```

```matlab
[nRow, nCol] = size(rfdata);
env = abs(hilbert(rfdata));
col=5;

% plotting
figure
plot(axial,rfdata(:,col));
hold on
plot_param = {'Color',[0.6 0.1 0.2],'Linewidth',0.5};
plot(axial,env(:,col),plot_param{:})
plot(axial,-env(:,col),plot_param{:})
hold off
title('Hilbert Envelope')
```
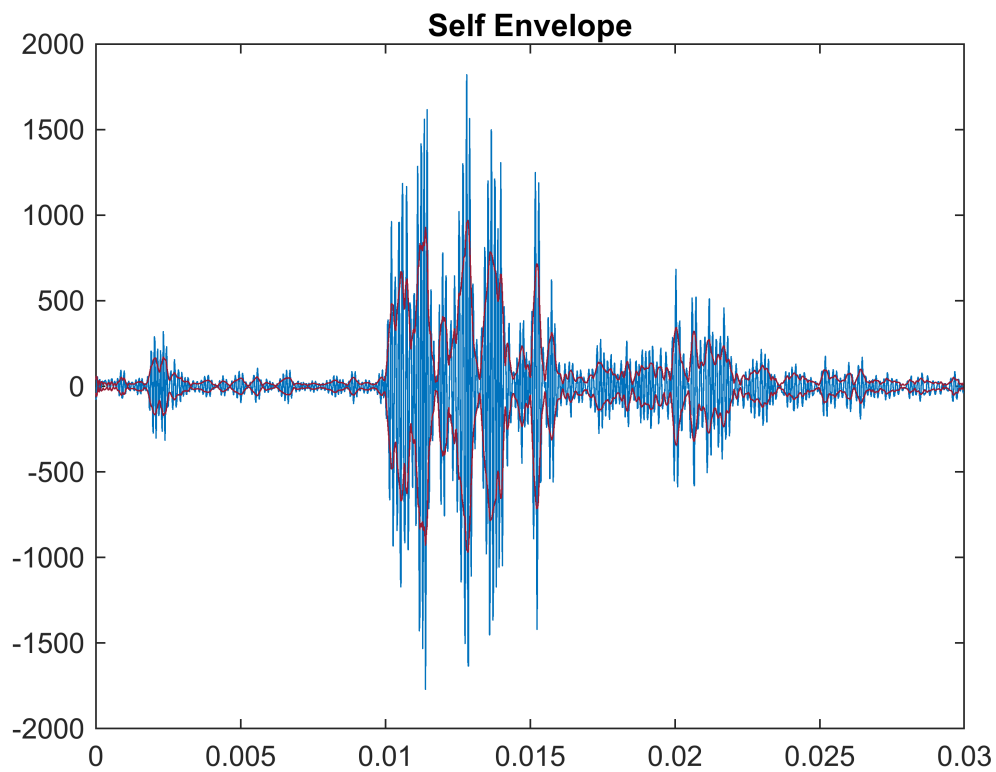


```matlab
S = (fft(rfdata));
N = length(S);
S(1:N/2,:) = 0;
si = ifft((S));

% plotting
figure
plot(axial,rfdata(:,col));
```

```
hold on
plot_param = {'Color',[0.6 0.1 0.2],'Linewidth',0.5};
plot(axial,abs(si(:,col)), plot_param{:})
plot(axial,-abs(si(:,col)), plot_param{:})
hold off
title('Self Envelope')
```
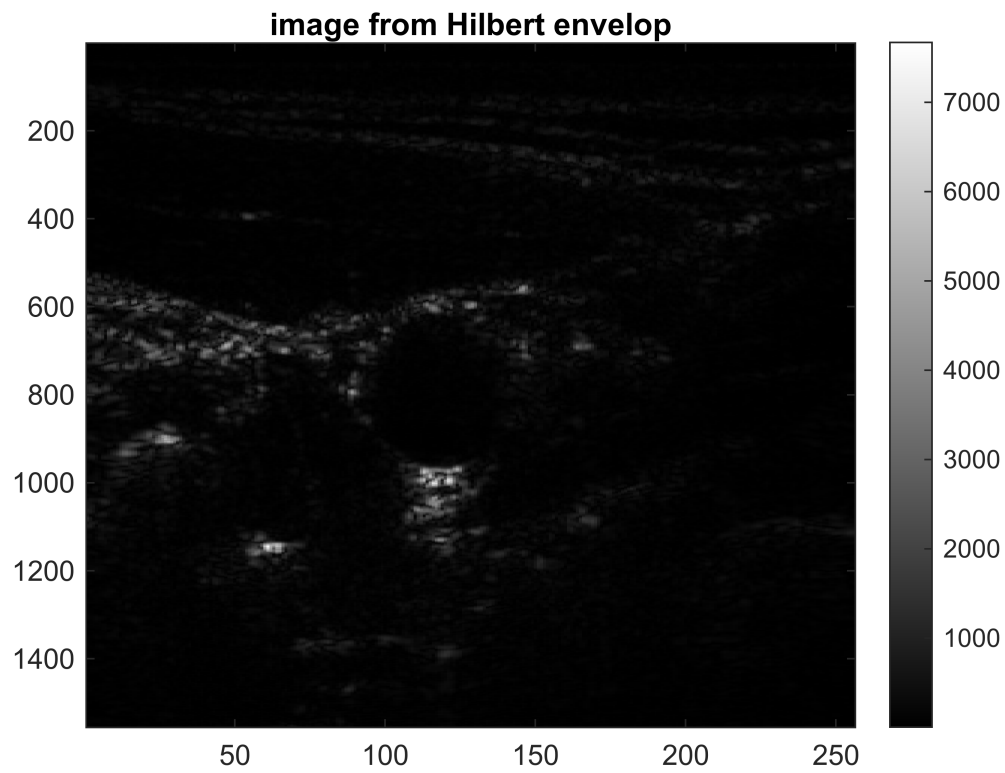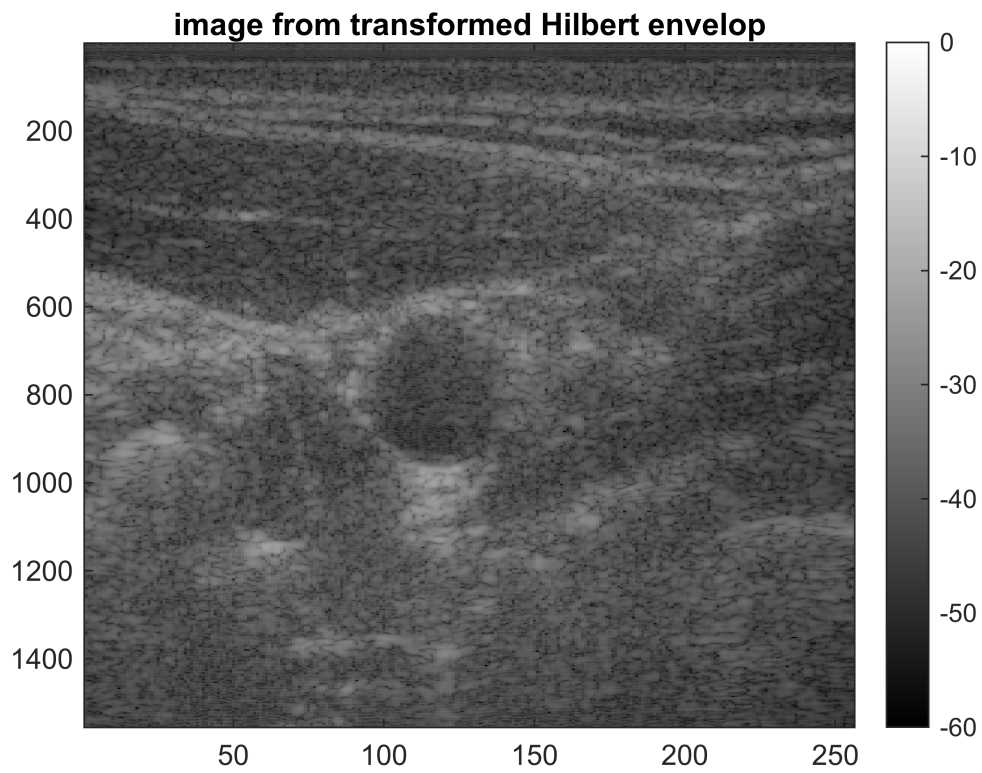


```
figure
imagesc(env), colormap('Gray'), colorbar
title('image from Hilbert envelop')
```
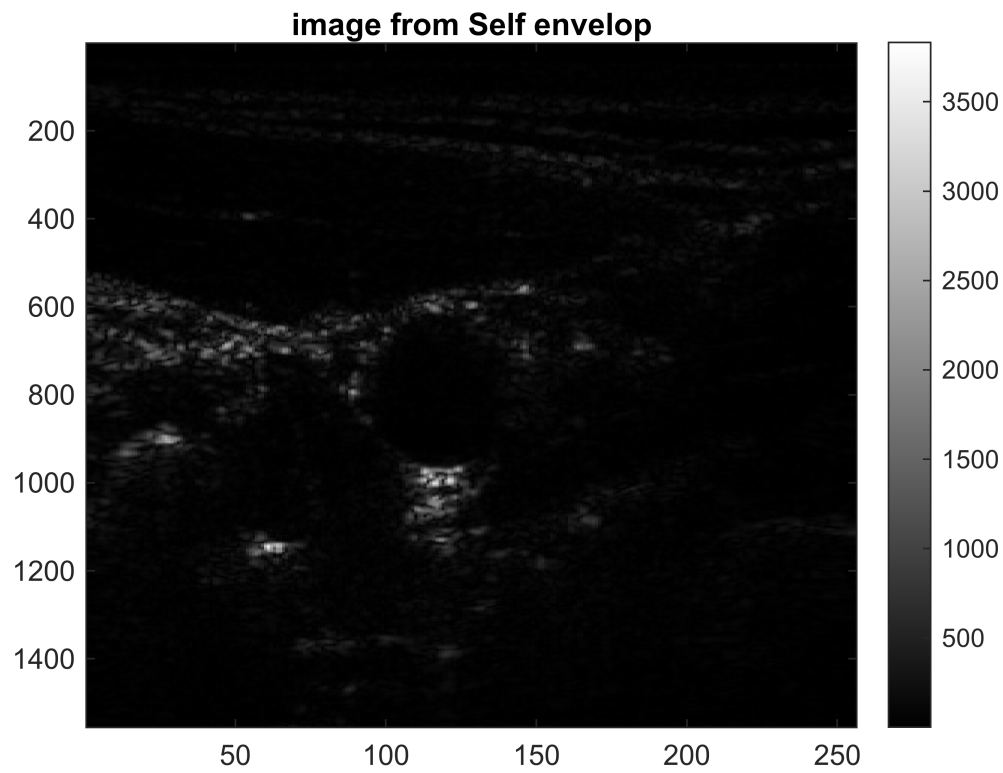
image from Hilbert envelop

```
figure
transformedEnv = 10*log10(env/(10^6));
imagesc(transformedEnv,[-60,0]), colormap('Gray'), colorbar
title('image from transformed Hilbert envelop')
```

image from transformed Hilbert envelop

'Carotid artery with potential plaques on the right wall is seen'

```
ans =
'Carotid artery with potential plaques on the right wall is seen'
```

```matlab
% ---- self envelop
figure
imagesc(abs(si)), colormap('Gray'), colorbar
title('image from Self envelop')
```

image from Self envelop

```
figure
transformedEnv2 = 10*log10(abs(si)/(10^6));
imagesc(transformedEnv2,[-60,0]), colormap('Gray'), colorbar
title('image from transformed Self envelop')
```

image from transformed Self envelop

'Carotid artery with potential plaques on the right wall is seen'

```
ans =
'Carotid artery with potential plaques on the right wall is seen'
```