

```

ylabel('Power density (dB/Hz)');

hold on,

yLow = -60;
yHigh = 50;
T = nfft/fsampIQ;
delf = 1/T;
fcenter = (nfft/2)*delf;
fVec = fVec - fcenter;
Syy = [Syy(nfft/2 + 1 : end); Syy(1:nfft/2)];
plot(fVec/1e6,10*log10(Syy));
ylim([yLow,yHigh]);
grid on;
shg;
xlabel('Frequency (MHz)');
ylabel('Power density (dB/Hz)');
title('Power spectral density estimate from complex data');
shg;
legend('Estimate after Conversion', 'Estimate from the signal')

fprintf(['After converting back to baseband with the if2iq function, the higher \n'...
'frequecny signals are lost. This is due to low pass filtering that happens \n' ...
'within the MATLAB decimate function when we convert the bandpass signal back \n'...
'to baseband signal. Also, the output of the if2iq was scaled by 2 because \n' ...
'the discrete bandpass signal after mxing and going through the low pass \n'...
'filter has the half the magnitude of the original signal. \n'])

```

After converting back to baseband with the if2iq function, the higher frequency signals are lost. This is due to low pass filtering that happens within the MATLAB decimate function when we convert the bandpass signal back to baseband signal. Also, the output of the if2iq was scaled by 2 because the discrete bandpass signal after mxing and going through the low pass filter has the half the magnitude of the original signal.