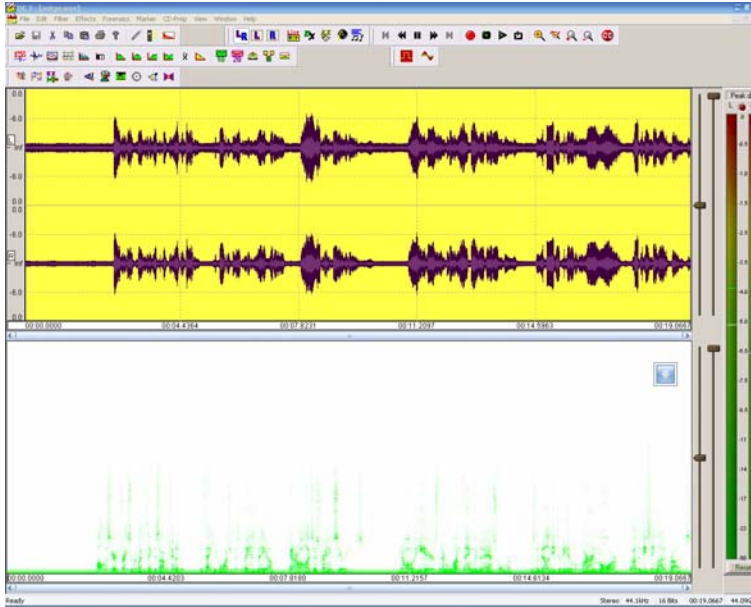


## Properly Adjusting The DC SEVEN Spectrum Analyzer

This week we show you how to adjust the spectrogram so that you can see hum. The following file has some hum in it.

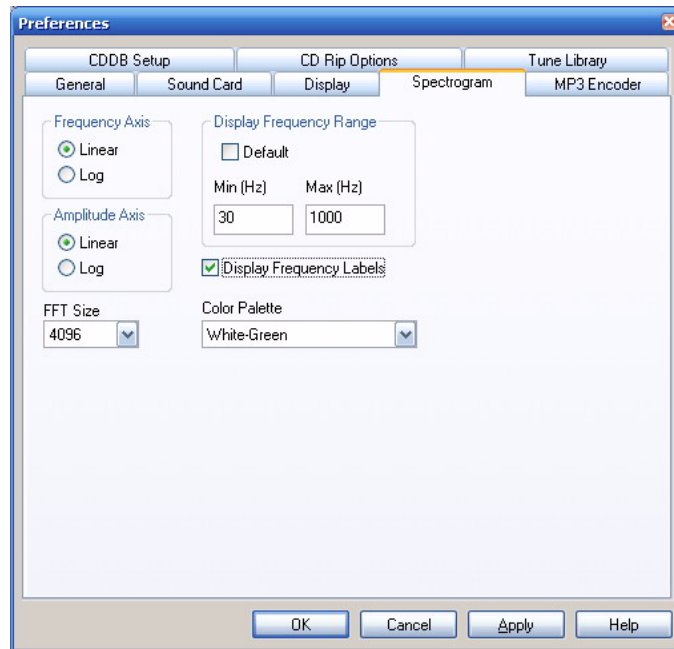


If you want to hear this file, [Click Here](#):

The source window at the top shows a nice looking waveform. You can't hear it, but it's a recording of speech. This is, of course, a time domain display. This type of display is quite useful, but it does have its limitations. For example, you can't tell if the speaker has a low or high-pitched voice, or if there are other sounds in the background.

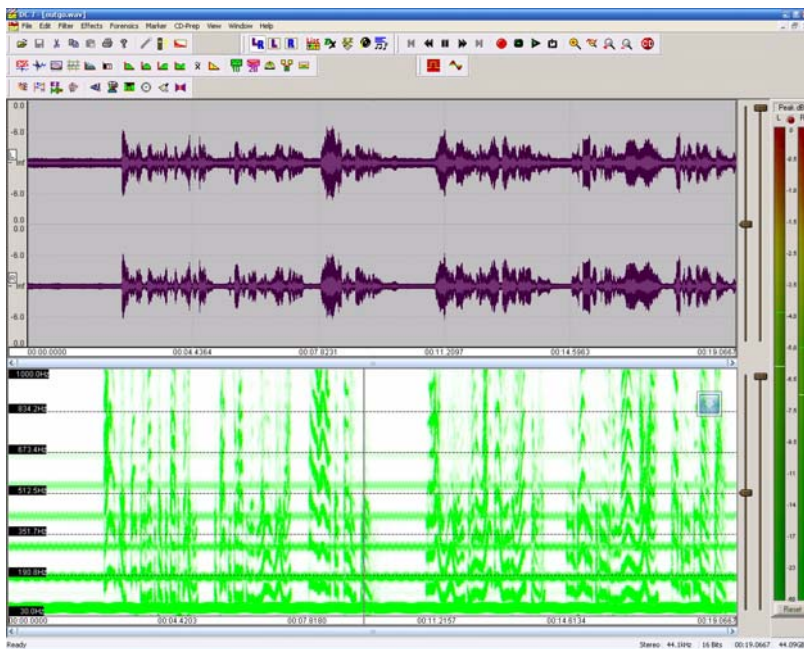
Our ears, however, are quite sensitive to frequencies and can easily tell us these things. If you could play this file, you would hear not only a voice, but you would also hear that there is an annoying hum in the audio. You can't tell that by looking in the time domain, but you can tell that by looking in the frequency domain and that's what our spectrogram does. We've turned on the spectrogram in the lower window. Have a look. See the hum there?

What? You say you can't see it? All you see are some blobs of green? Well, let's fix that by adjusting the settings on our spectrogram. To do that, simply double click anywhere on the spectrogram display and change your settings to be like this:



Now hit apply and OK. You see, we've changed our spectrogram to show us only frequencies in the 30Hz to 1000Hz range and we've told it to label these for us. In effect, we have "zoomed" in the frequency domain so that we can have a closer look at a limited range of frequencies.

Now have a look at our spectrogram display:



Now we can see that there is continuous and significant energy at 60Hz, 180Hz, 300Hz, 410Hz and 540Hz. These are Odd harmonics and our Harmonic Reject filter will take

care of this hum nicely. Note that our ears told us there was a hum, and if you are trained in listening to such things you could probably tell the hum was made up of several frequencies, but you couldn't tell which ones and how many. The spectrogram did that job for you.