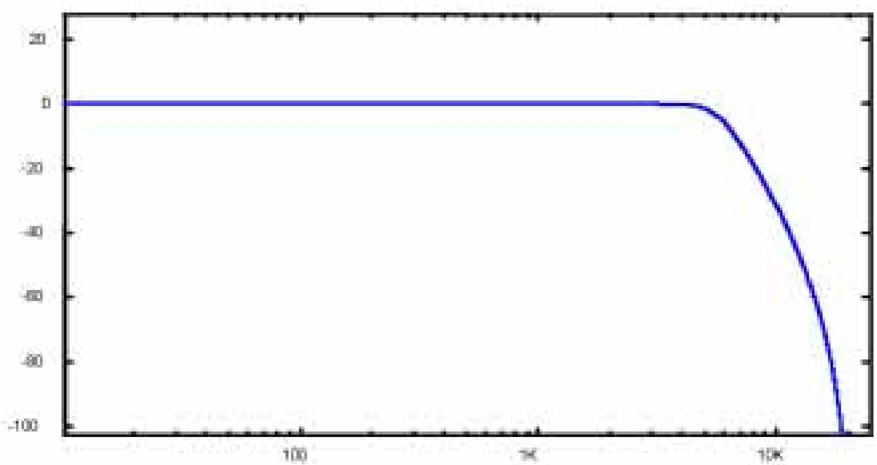
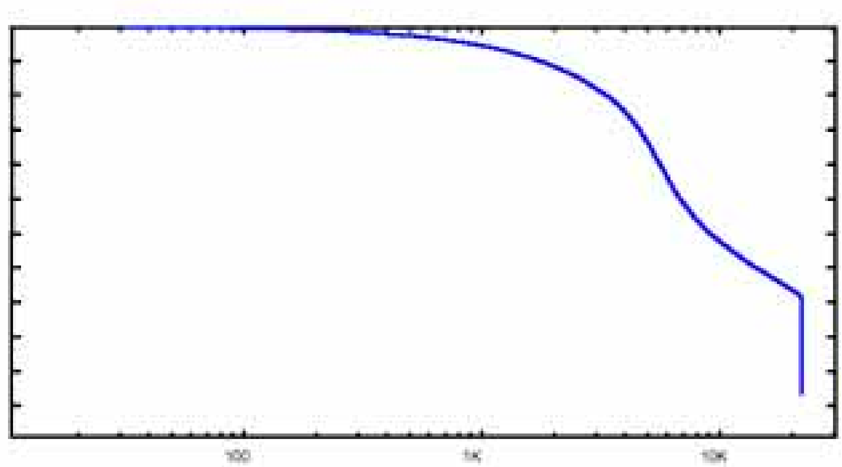
Cabinet Imaging

In the past, cabinet emulators have generally been created using simple lowpass and/or bandpass filters. While this does somewhat simulate the lowpass effect of a guitar loudspeaker, it fails to reproduce the subtle peaks and notches that give the speaker its character. These types of cabinet emulators also completely neglect the phase response of the real cabinet. The typical cabinet emulator frequency response looks something like this:



Typical cabinet simulator frequency response

Notice that the frequency response is smooth, and has little character. All this filter does is roll off some high frequencies. Let's also examine the phase response of this filter:

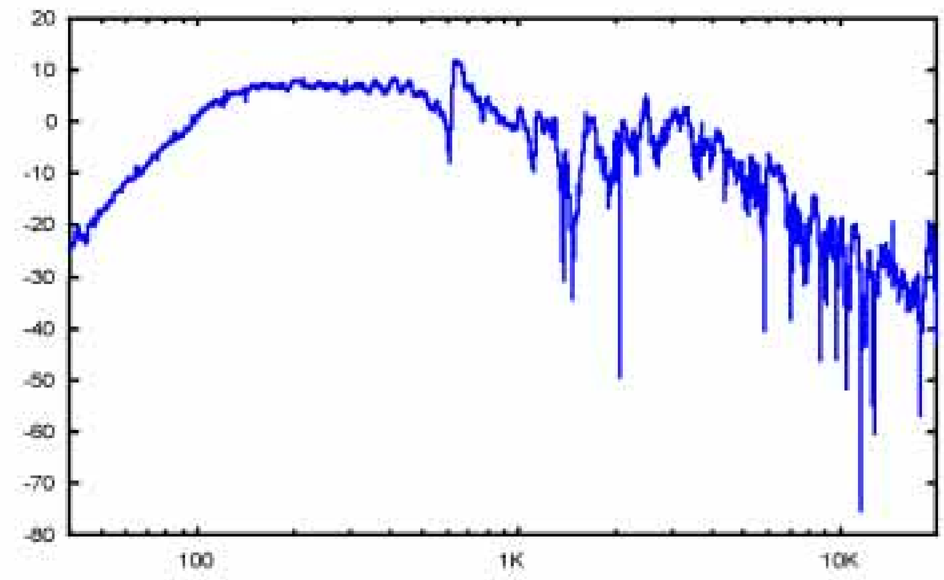


Typical cabinet simulator phase response

Notice again that the response is rather uninteresting. This is much too smooth to be a real cabinet, and it is apparent when one listens to this type of simulator. It sounds very plain and one-dimensional.

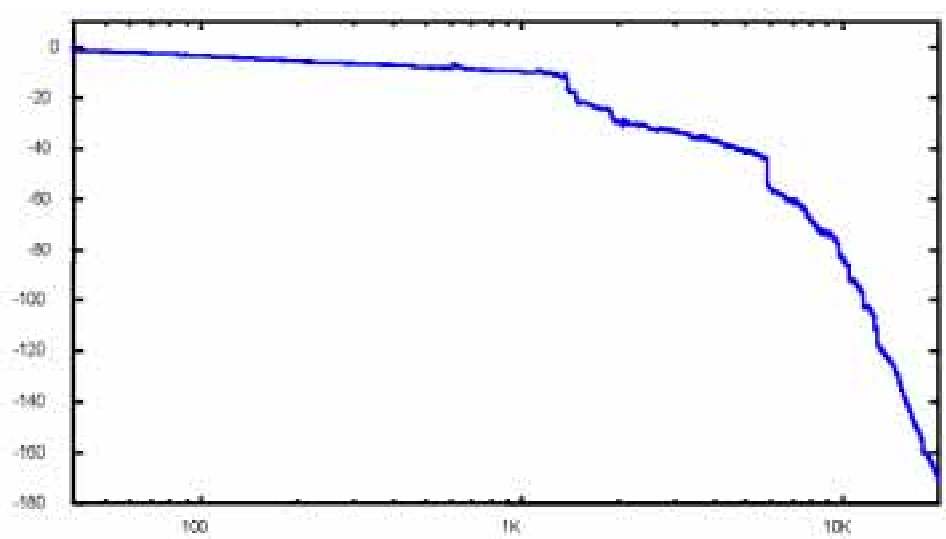
Cabinet Imaging

Now let us examine the frequency response of a real 4x12 cabinet as measured in a typical studio situation through a microphone.



Real 4X12 Cabinet Frequency Response

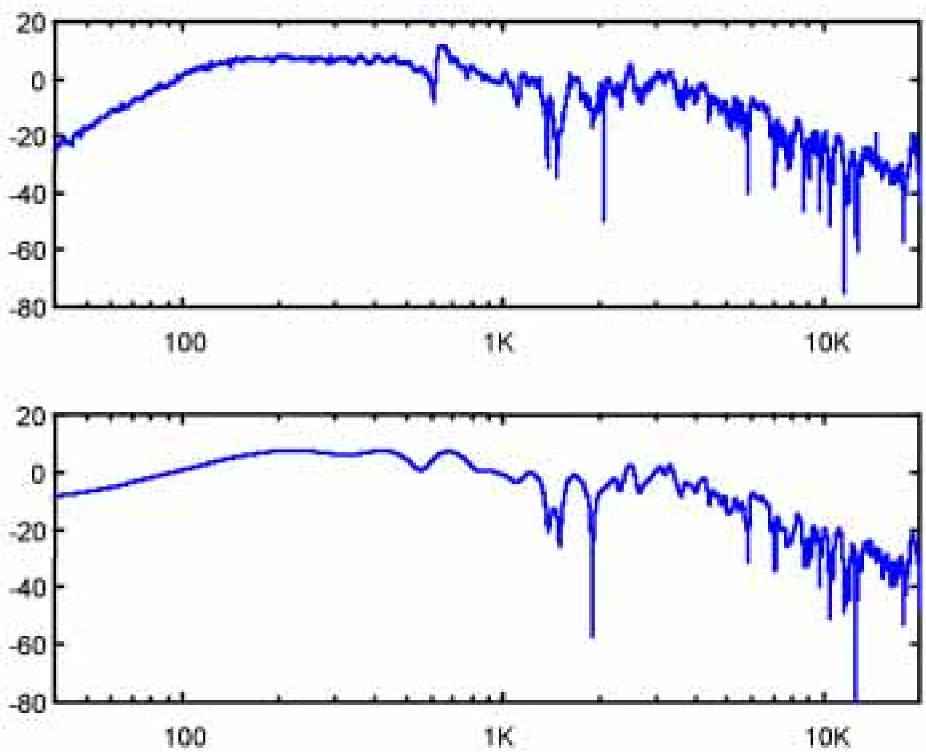
Notice the great amount of detail at all frequencies (the fuzziness of the curve is due to measurement noise). The notches and peaks are what give this cabinet it's distinctive sound. The phase response of this cabinet is:



Real 4x12 Cabinet Phase Response

The phase response of this cabinet is very dynamic at different frequencies and dramatically affects the feel of the cabinet. Different frequencies are delayed by different amounts as they go through the speaker, and resonate in the cabinet.

Finally, let's examine Johnson Cabinet Imaging Technology™. This same 4x12 cabinet was imaged, and the resulting cabinet stored in the J-Station. Let's look at its frequency plot vs. the original (you will notice that the measurement noise is greatly reduced since the Cabinet Image is run direct and does not need to be miked).

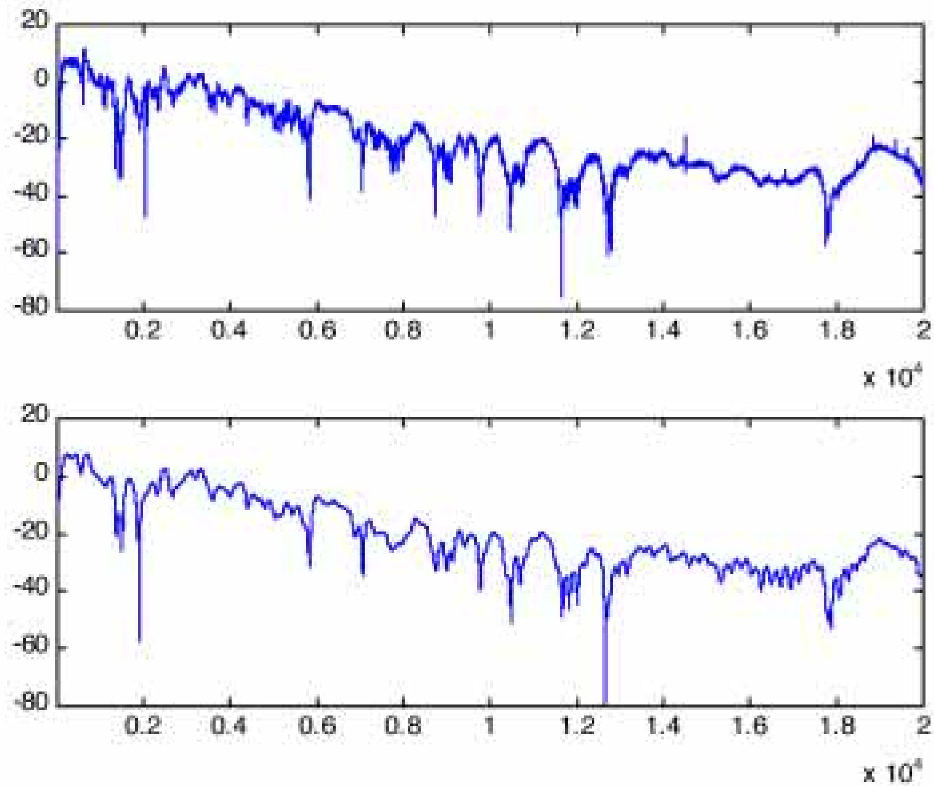


(TOP) Actual Cabinet Frequency Response (Bottom) Cabinet Image Frequency Response

Notice how the Cabinet Image plot (bottom) follows all the peaks and notches of the original (top). There is a lot of measurement noise below 40Hz in the original due to the insensitivity of the recording equipment at those frequencies. A linear frequency scale will help us to see better at high frequencies:

Cabinet Imaging

Johnson Amplification



(TOP)Actual Cabinet Frequency Response (Bottom)Cabinet Image Frequency Response (Linear Frequency Scale)

Again, notice how the Cabinet image(bottom) matches every peak and notch of the original(top).

(TOP)Actual Cabinet Phase Response (Bottom)Cabinet Image Phase Response

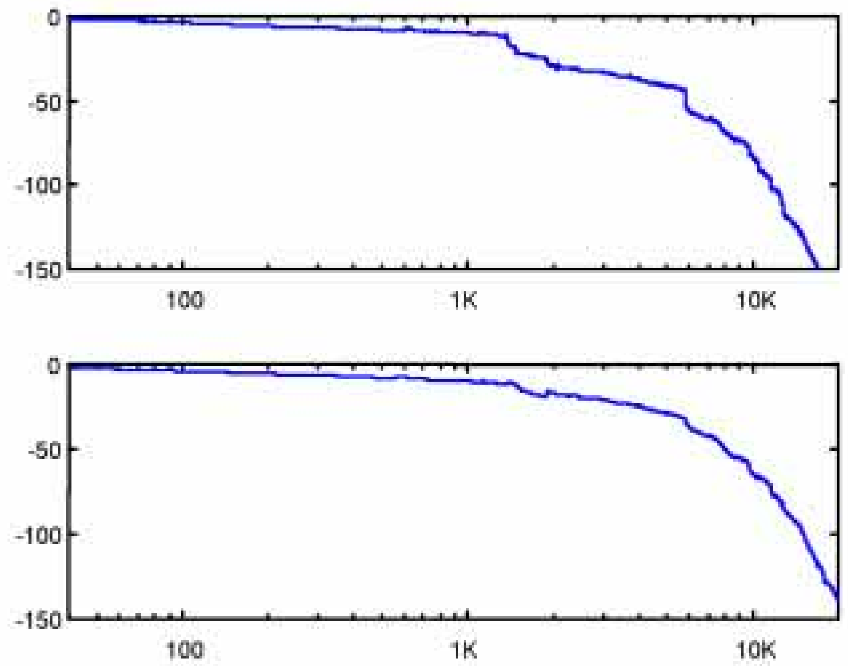
Keep in mind that the deviation in the low frequency area is expected, and is below 40Hz. Notice that, except for a few sharp discontinuities in the original(top), the Cabinet Image(bottom) follows the phase response of the original very closely.

Cabinet imaging is a revolutionary technique for creating cabinet sounds. The frequency and phase responses accuratly follow those of the original cabinets, thus imparting the sound and feel of the original cabinet.

Cabinet Imaging

Johnson Amplification

Lastly, let's examine the phase response of the Cabinet Image:



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(TOP)Actual Cabinet Phase Response (Bottom)Cabinet Image Phase Response

Keep in mind that the deviation in the low frequency area is expected, and is below 40Hz. Notice that, except for a few sharp discontinuities in the original(top), the Cabinet Image(bottom) follows the phase response of the original very closely.

Cabinet imaging is a revolutionary technique for creating cabinet sounds. The frequency and phase responses accuratly follow those of the original cabinets, thus imparting the sound and feel of the original cabinet.