Subject: Re: Futzing with vibration control
Posted by Wayne Parham on Tue, 17 Nov 2020 17:25:57 GMT
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There are definitely differences between amps, and one of the things to watch for is low-level behavior. Amps that are designed to run higher-power levels sometimes aren't as clean at very low power levels. That's what the headphone amp guys watch out for in their amps. Tube amp guys often do too.

Some artifacts aren't as noticeable at higher levels as they are at low levels, because the anomaly is proportionally lower at higher power levels. An example is crossover distortion, and by "crossover" here I don't mean the filters used to distribute various frequency bands to appropriate subsystems, but rather the circuit behavior as the input signal waveform passes from positive to negative and back again.

The zero-crossing region is a potential place for error, because active device characteristics shift as the signal level goes lower than their turn-on bias level. They go from linearly conducting with an output signal that's proportional to the input signal to simply shutting off. This effectively loses the lowest level signal, that which is below the turn-on bias level. That's why push-pull amps are never purely (Class B) push-pull when used for audio - each section is biased so it stays conductive through the zero crossing line, which is called class AB.

As for the line splitter for your subs, I've seen this before. Pretty often, actually, and if we've discussed it before forgive me for talking about it again now.

You're definitely right that the output impedance of the preamp or source - whatever is driving the line being split - has an influence on the signal when the load is shifted. If the output impedance is really low and the drive level strong, then the load can be shifted pretty drastically without much effect. But if the output impedance isn't all that low, then the drive signal isn't strong and the load can swamp it. Sometimes a higher load (from splitting or whatever else) just causes a drop in amplitude but sometimes it even changes the response. If the load or the source aren't purely resistive, then a changing load will alter the response.

And resistive attenuators can cause fits too. Most have an input and an output, with the input being across a fixed resistance and the output being across the potentiometer wiper and a common lead. If the resistive attenuator is connected backwards, then the source output has a changing load which is dependent on the position of the attenuator. If the attenuator is set for high attenuation, then the source is pretty much shorted. So if a preamp output is split, and a passive attenuator is placed on the mains line - to match SPL with the subs, for example - then there is a possibility of this occurring. If the attenuator is installed backwards, it will give the source equipment an increasingly excessive load as attenuation is increased. It will be very difficult to get the levels matched and often times sounds will just plain sound weird.