Subject: Choke cpaazitance, round 2
Posted by PakProtector on Tue, 28 Mar 2006 10:41:48 GMT
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Hy-hy!!!,I did a frequency sweep like I did for the MQ items. These have a large C-core, and dual sectioned coils, one on each leg. The core is gapped with some poly film. L at 6o cps is ~650 Hy. The gap took a bit of L out, but past expeience shows that they sound better if the L is more disconected from signal level.Anyway...these both resonated at a few cps past 1k Hz. As predicted by theory, the impedance goes through the roof, and the starts falling.This behaviour leaves me wondering about using Iron like this with high output Z drivers in Zero-nfb amps. Good thing that for open loop amps, one does not usually deal with high source Z on purpose...:)I am modifying the amp so that the slightly taller chokes can be installed, and then the Brown will hit the fan(no slight to the package mis-handlers at UPS intended).cheers,Douglas

Subject: Re: Choke capazitance, round 2
Posted by Damir on Tue, 28 Mar 2006 11:42:13 GMT
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If I understand you correctly, with self resonance f~1kHz and L~650H, we can expect:Cw = 1 / (4Pi^2 * f^2 * L) ~ 39 pF Can you explain your results / findings in more details?

Subject: Re: Choke capazitance, round 2
Posted by Wayne Parham on Tue, 28 Mar 2006 15:37:42 GMT
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Wow, self-resonance at 1kHz? Could it be any worse?

Subject: Re: Choke capazitance, round 2
Posted by Damir on Tue, 28 Mar 2006 16:16:47 GMT
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Interestingly, IME - it doesn`t "hurt" the sonics, but contrary - it seems to me that sound is a little better with grid choke then with grid resistor. But, with low impedance out driver.With high-impedance driver (and resistive load) I had some "strange" sonic results... Expecting Douglas to give us the full report...

Subject: Re: Choke capazitance, round 2
Posted by Wayne Parham on Tue, 28 Mar 2006 16:59:59 GMT
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Yes, I agree, I would expect a coil to be better than a resistor too. I just thought it was odd to have a PS filter choke having characteristics that made it self-resonant at 1kHz. Then again, with additional filter capacitance, resonance would be shifted way down so maybe it's a mute point.

Subject: Re: Choke capazitance, round 2
Posted by PakProtector on Tue, 28 Mar 2006 20:06:08 GMT
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Hey-Hey!!!,The choke in question is a CT grid choke. On PS inductor resonance, it is not a bad practice. One LC stage to remove nearly everything but a 120 cps ripple, then a second LC with a tuning C shunted across the L to establish its resonance at 120 cps. Nearly pure DC is the result.The numeric analysis would seem to idicate such a widely varying load on the driver stage would be bad news...these are ov course the same methods that would have us using SS for amplification...:)cheers,Douglas

Subject: round 3....heh-heh-heh
Posted by PakProtector on Wed, 29 Mar 2006 00:06:53 GMT
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From the Honourable Damir: If I understand you correctly, with self resonance f~1kHz and L~650H, we can expect: Cw = 1 / (4Pi^2 * f^2 * L) ~ 39 pF Can you explain your results / findings in more details?**********It's too bad that half the windings don't have a quarter of the capacitance!Half the coil has half the L, unless it's by itself...then ov course it has a quarter of the end to end L. cheers,Douglas

Subject: Re: Choke capazitance, round 2
Posted by Damir on Wed, 29 Mar 2006 11:01:11 GMT
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I posted about it in the "Tubes" section some time ago. If we have pentode or cascode stage with, say 15k load and internal resistance of 100k, then "effective" load is 15k//100k = 13k.If our driver has, say S=4mA/V and grid choke as a load, then amplification on some higher frequencies, say 1kHz is A= S*Ra = 13*4 = 52 times. Choke impedance on 1kHz is theoretically Z = 2Pi*f*L =

2Pi*1000*650 = 4Meg >> 13kOhms.But, on low frequencies, say 40Hz, our choke impedance is only 163,3k and our amplification is now: A = S * (13//163,3) = 4*12 = 48 times.Although it is only 0,7dB of difference, I`m pretty sure that it is audible. Plus falling of highest frequencies `cos of low pass filter formed with Rout of the driver and Cw.What you think about actual measurements of frequency response in real amp with real components (grid chokes) ?

Subject: Re: Choke capazitance, round 2
Posted by PakProtector on Wed, 29 Mar 2006 16:08:20 GMT
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Hy-Hy!!!,I think it is time to measure tha amp again. It has gotten a bit on the heavy side...but that may have improved its power delivery.The E-Linear plate-to-grid NFB will do a bit to level the response. The 20-20 lineage of the output TX should grant it full power down to its advertised low frequency limit...:)I will measure it soon. Must get proper load that won't overheat.cheers,Douglas

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