

VHF/UHF TVI Filter

By G8MNY (BATC's CQTV 160, & RSGB's Radcom 6/93 p75) (Updated Feb 10)
 (8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

In strong signal areas an attenuator may be all that is needed to reduce TVI but if it is not read on..

I have run up to 400W on 70cm & 2m have found this filter design very effective. It is basically a suck out filter teed to the aerial socket, & with effective UHF/VHF braid breaker. UHF losses with this design are much lower than some commercial filters!

This filter is different than using a 1/4 wave coax stub on 144MHz, that also works on @ 3x on 432MHz, but an unwanted notch @ 5x on 720MHz!

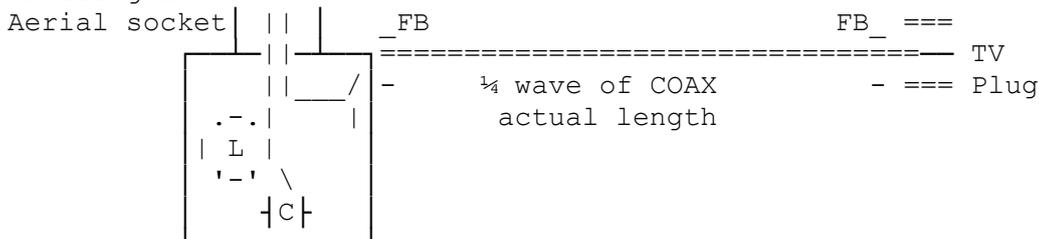
NEED

This filter has been made "on the spot" once, out of a "cat food tin lid" with a few components, to successfully solve a 25W ERP 70cms Packet Node TVI case. The problems were at a distant neighbour (50M away) to a remote node, where the TVI had been caused by a so called "satellite expert" who had added an unfiltered high gain UHF booster amplifier to get TV signals around the house.

DESIGN

This design suits all UHF & VHF bands, just change the number of turns etc...

Belling Lee



PARTS

- Tin Plate (Steel drinks can!)
- Belling Lee TV Plug.
- Belling Lee Chassis TV socket (solderable metal type).
- 1/4 wave (12cm) 75 ohm TV Coax.
- 2 Coax sized ferrite cores.
- a few cm of 22swg Silver/enamel copper wire for L.
- 2-10pF trimmer.
- Paint (to make it more presentable).

COIL

Band	Turns	Dia
6M	8	9mm
4M	7	7mm
2M	5	6mm
70cm	3	3mm
23cm	1	3mm

make C a 0.5-5pF

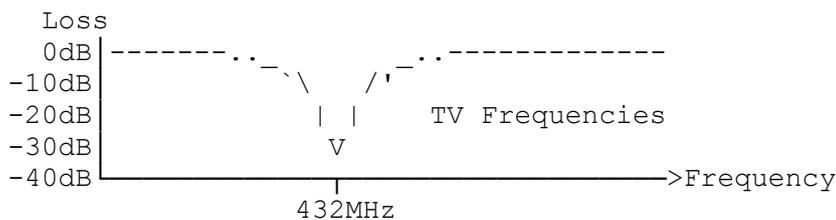
CONSTRUCTION

It is made in the smallest box possible to keep the UHF TV impedance mismatch losses down. If you use a bigger box (e.g. for several band filters) then the input & output will have to be properly 75Ω coax fed to the common sickout T point.

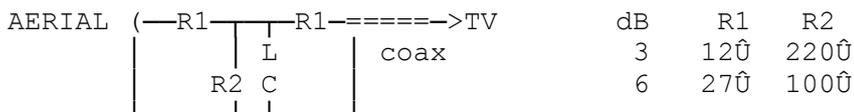
1/ Cut tin plate (cleaned old can) into a cross shape (with 3mm tabs to solder

CONCLUSION

I have measured up to 30dB rejection, with only about 1dB insertion loss @ 550MHz.



If attenuation is not really a problem, improved interference performance can be obtained with this filter if a "T" attenuator (3-6dB) is included in the box & the suck out connected across the middle "T" section.



This is because a bad SWR of the aerial/TV system will not then de-tune the filter so much.

IN USE

See where the filter is needed, some times in front of the VCR/DVD/STB. Remember TVI with neighbours is a delicate problem, as they always think it is your signal the is "jamming the set", rather than a poor TV Rx or installation.

I still have an old copy of the DTI's "How to improve TV & radio reception", which I find useful, as it clearly shows the need for filters in the TV aerial lead & implies this is down to the TV service engineer to sort out!

Aerial/loft boosters/active splitters are bad news, as they are really just broadband mixers with any large signals. But filters in front of one may cure a problem if you can get to it! Possible with the LC built inside one!

Try to educate your neighbours so that if they move away, they leave the trap for the next tenant & do not take it with them where it will do no good.

Date/Time : 31-Dec 14:54 From: G6OHM@GB7HOL.#22.GBR.EU

I set about building a 4m, 2m, 70cm compound suck out filter in a tobacco tin.

I added as suggested 75ohm coax inside the box, & soldered it to the box & where the coax comes into the box. I wound each coil on a pencil & soldered each coil to the coax socket. Next I soldered the variable caps to each coil & soldered the other end of cap to tin box. I fitted it to my tv set this morning & played around until I found the best spot between the TV antenna coax & the digital box. Each band has tuned up very well.

I now have no EMC from 4m, 2m or 70cm. For the first time in years. I went onto 2m SSB & had contacts without the xyl yelling at me you are patterning the TV. Thanks Andy G6OHM @ GB7HOL

My wife noticed some TVI on an analogue DVD recording from my 2M QSOs, so I tried a commercial HPF that quoted 2dB UHF loss & -30dB @ 100MHz, but that made some of the channels too weak to use!

John came around & made one of his filters up for 2M & put it in front of my amp/splitter. Result no noticeable loss on the weakest channel & no TVI. Peace!

Jude 2E0BXZ

Why don't U send an interesting bul?

73 de John G8MNY @GB7CIP