Reducing FreeDV TX USB Noise with a USB Filter

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THE PROBLEM

It's always a good idea to use a separate receiver to monitor one's own audio (FreeDV) and video (FreeDV+). Separate from the Apache Labs ANAN-10E SDR transceiver at WA6NUT, I use an Omni VII to monitor my signal. My transmitted audio has always been plagued by low-level background noise sounding like a hive of angry bumblebees. And, unless I mute the receiver's speaker, the background noise will build in amplitude similar to audio feedback. So, when I contact another station, I have to mute the FreeDV audio on the monitor receiver or the FreeDV USB speakers. I had tried various means (including ferrite cores) to clean up my transmitted audio, but with no success.

A SOLUTION

I recently happened to be monitoring a QSO on 14236 kHz (the FreeDV frequency) when one of the operators mentioned a "bumblebee" noise problem on his transmitted audio, and his solution. His audio was now very crisp and clean. He mentioned that a "USB isolator," connected between his USB audio adapter (used with his mic) and his PC's USB port, fixed the "bumblebee" problem. I had never heard of a "USB isolator" (also known as a "USB filter").

I contacted him via e-mail, and he provided this link to the USB device at Amazon:

https://www.amazon.com/iFi-iSilencer-Eliminator-Suppressor-Adapter/dp/B084BZ7PGF?th=1

It's an "iSilencer+," made by iFi, and it's a bit pricey ($60) because it's aimed at the audiophile market. But it works, providing transmitted FreeDV audio free from any significant USB port digital artifacts.

DOES IT WORK?

I purchased an iSilencer+, and tried it with my Manhattan model 151429 audio adapter, with no noticeable improvement (this adapter is used with my mic and speakers). I then tried using it with the USB audio adapter in my MFJ-1204 USB Radio Interface (the MFJ-1204 sends the FreeDV+ baseband TX signal to my HF transceiver), with no improvement. Next, I tried using it at another USB port on my laptop, with no improvement.

IT WORKS!

At this point I was beginning to think that the iSilencer+ was not going to work. But, pressing on, I tried the iSilencer+ with a different USB audio adapter, a fairly expensive unit from Turtle Beach. The Turtle Beach Amigo II (now listed as a "Discontinued/Legacy Product" on the Turtle Beach website) was set up for my FreeDV mic input (and speakers). The Turtle Beach unit, without the iSilencer+, was considerably noisier than the inexpensive Manhattan unit. But, with the iSilencer+ added to the Turtle Beach unit, the noise was reduced substantially. I also found that the iSilencer+ adds significant delay to the transmitted audio, so that the operator should pause several seconds before switching from TX to RX. My audio, received on a KiwiSDR 900 miles distant (VE6JY/VE6SLP in Edmonton, Alberta), seemed crisper and the received SNR at the SDR was +9.0 dB, while transmitting at 40 watts here in Colorado (1600 mode). One would presume that less noise on a signal would result in a higher SNR.

CONCLUSIONS

In conclusion, YMMV (your mileage may vary). My experience was similar to those in on-line reviews for the iSilencer+. This device will greatly reduce the USB noise with certain USB audio adapters, but not all. In the FreeDV+ application, you may experience better SNR at the receiving station, but be aware of the latency added by the iSilencer+.

Unfortunately, you won't know if you'll see improvement unless you buy one and try it. In my case I think it was worth the $60!

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