ELECRAFT Operating Note

Using the Audio Peaking Filter for weak-signal CW work

Both the K3 and KX3 have an APF control (audio peaking filter). APF can be extremely effective when you're trying to copy weak CW signals buried in the noise.

What is the difference between roofing filters and Audio Peaking Filtering?

Most DSP filters have very steep skirts; they're often referred to as "brick-wall" filters for this reason. This is the type of filtering associated with the WIDTH control (K3) or PBT control (KX3).

In contrast, the APF is a filter with a very narrow peak (about 30 Hz at the -3 dB points) and very broad skirts. The narrow peak brings up the signal amplitude slightly, while the broad skirts prevent noise from being amplified and delayed in such a way as to dominate the signal. The APF function used in the K3 and KX3 is a modern DSP reinterpretation of the hardware APF circuit found on some legacy transceivers, which was very effective.

How is APF implemented in the K3 and the KX3?

On the KX3, the APF switch is labeled "APF" (tap), while on the K3, it's labeled "DUAL PB" (hold). The K3 actually provides two different special filter functions; use the DUAL PB menu entry to set up the switch for APF.

When you turn on APF, the DSP graphic changes on the rig's display to remind you of the nature of APF, with its narrow peak and broad skirts.

What settings should I start with when using APF?

Elecraft suggests setting the pass band width to about 250-300 Hz when using APF.   The DSP graphic still shows an approximate representation of the width even with APF turned on.