

The WOLFVAVE Audio Processor

Don G3XTT gets hands-on with the WOLFVAVE audio processor from SOTABEAMS.



Fig. 1: The WOLFVAVE, compact but with a clear screen. Fig. 2: Side connectors.

We announced the SOTABEAMS WOLFVAVE Advanced Audio Processor in our May News pages and Richard G3CWI, SOTABEAMS proprietor, was also kind enough to loan me one of the units for review.

What is it?

My first thought was to wonder what an external audio processor might offer in this era of radios that have a huge amount of on-board RF and audio processing. A quick look at the features, though (see sidebar) and it soon became apparent that there is an awful lot to this innocuous looking box. Clearly a lot of thought has gone into it and the design makes maximum advantage of the latest in digital signal processing (DSP). The unit is based around a low-power ARM processor with 20-bit CODEC.

As the name suggests, this shack accessory works at audio frequencies. It's not going to help with preventing, for example, huge broadcast signals getting into the front end of your radio and causing intermodulation problems. However, what it can help with is, for example, taking out that annoying carrier, narrowing the audio passband around a CW signal without any 'ringing' and allowing you to adjust the audio passband to achieve the best reception while avoiding adjacent signals. There is an adaptive noise reduction capability. And there are some other neat features too. For example, I don't know of any similar device that offers age-related hearing loss adjustment in which you can enter gender and age and the audio output is tailored to a typical hearing loss curve for that combination.

There's an audio test generator, a handy feature for setting up a transmitter, for example, and a neat idea that I'm surprised no one has thought of before, to regenerate CW signals, described as 'experimental' at this stage but I can see how this could be valuable to newcomers to CW.

Let me just describe that last feature in a little more detail. The WOLFVAVE acts as a CW tone generator (a nice sine-wave output), triggered by the incoming CW. This means you just listen to the CW tone, without the background noise you would hear if listening directly to the output of the radio. Of course, it needs a reasonably clear incoming signal to work on but should make CW reception

less tiring during, for example, a long ragchew.

Out of the Box

The WOLFVAVE, Fig. 1, came well packed, with the unit itself, plus USB cable and audio cable with 3.5mm connectors. Richard also included the audio ground loop isolator (sold separately but recommended to minimise the likelihood of hum from ground loops or poor earthing). The build quality is excellent, including the quality of the labelling. On one side are connections for micro-USB and audio-in while on the other side is a standard DC power input (5.5 to 18V) and audio outputs for headphones and loudspeaker (1.1W at 10% total harmonic distortion), Fig. 2. Power can be supplied via the USB connection or from, say, a 12V (recommended) Wall-Wart PSU. SOTABEAMS sell a suitable low-noise PSU, if you don't have one to hand.

Setting Up

There is no manual. As is common nowadays, full details are available from the WOLFVAVE website. However, setting up is trivial – connect power plus audio-in and audio-out. In my case I used the USB socket for powering the unit and headphones on the output (I almost always operate with headphones, mainly to avoid distractions from shack noises – fans on radio and amplifier, for example – and 'noises off' – family, dog, etc!).

Once set up, it does pay to check out the online instructions or, perhaps, G0POT's YouTube video (see references), to gain a full appreciation of the WOLFVAVE's many features.

In Use

The functions of the various controls are shown in Fig. 3 (taken from the SOTABEAMS website). The menu and other displays are clear and easy to read which, nevertheless, didn't prevent me from making a rather basic mistake when I started to use the WOLFVAVE! On CW, as I brought the bandwidth down, I found there was a point at which I was losing the signal I was listening to. Where I had gone wrong was that I should have first centred the unit's passband on my preferred CW tone (somewhere around 700Hz in my case but this is very much a matter of personal preference). My thanks to Richard G3CWI for pointing out my error – it's not every company that offers customer service while sitting atop a SOTA summit (thanks Richard)!

But the moral of the story is not only to read the instructions on the WOLFVAVE website and, ideally, to watch the video I mentioned above, but also to master the right-hand (multi-use) knob, which has a press-button function as well as being a rotary control.

I found the WOLFVAVE helpful for CW reception although it didn't add a lot to the excellent filtering in my Icom IC-7300. That said, it's great to be able to reduce the CW bandwidth to 50Hz without any ringing – only a few of the top-end transceivers can do that successfully.

However, in my case, I did find the filtering and noise reduction features more useful on SSB reception and, somewhat to my surprise, found the age-related hearing compensation to be a real boon on SSB reception.

I knew, because I'd recently had a hearing test, that my hearing was well down at the higher audio frequencies but I really hadn't expected to enjoy so much benefit from this feature (incidentally, this is a feature that is also available in the new FTdx101, review to appear next month, but I know of no other transceivers that allow tailoring of the received audio, even when they offer tailored audio for the transmit side).

I've mentioned the CW regeneration feature already. As a long-time CW operator, I like to hear what's happening on the band but I do realise that those newer to CW might find it more restful to listen to a pure sine-wave with no background noise. The feature works reasonably well when the incoming signal is strong enough to trigger the WOLFVAVE consistently. As you might expect, it's somewhat less reliable on marginal signals under the noise (when, to my mind, the Mark 1 human ear cannot be bettered).

The other feature of note is the tone generator, which is configurable in waveform, tone(s) and level. This can be useful for setting up a homebrew transmitter or a variety of other purposes within the shack.

Future-Proofing

For a small company, SOTABEAMS have developed an excellent reputation for innovative and useful products for the amateur radio market. These started as being aimed mainly at QRP operators (emerging largely from Richard G3CWI's enthusiasm for activating Summits on the Air). The WOLFVAVE is a good example and is built on expertise they have de-

WOLFVAVE Features

- Fully adjustable audio bandpass filtering
- Instantly adjustable for voice, data and CW (b/w 50Hz to 5kHz)
- State-of-the-art adaptive noise reduction
- 100 levels plus advanced control functions
- Adaptive tone eliminator: get rid of annoying carriers but leave CW
- Age-related hearing loss correction using ISO 7029:2017 median hearing-loss curves for males or females
- One-touch bypass function: see how much improvement your WOLFVAVE makes
- Memories for your settings easily store and recall your favourite settings
- Bright, clear, spectrum display
- See what's happening in your radio passband
- Audio test generator including two-tone test mode, sine, square and triangular wave
- Experimental CW regenerator: enjoy noise-free CW QSOs
- On-screen help, so easy to use
- Tuning/Overload LED dual colour indicator makes tuning easy
- User updatable firmware by USB, keep up with the latest developments (Windows app)
- Speaker output: 1.1W @ 10% THD [speaker output must not be grounded]
- Full power achieved when using 12 Volt external supply
- Separate speaker and headphone output
- Great for exhibition stations
- Latency 60 mS
- Low current drain
- 60 mA quiescent; battery-friendly!
- Small size
- 105W x 80D x 27H (mm)
- Lightweight
- 140 grams
- WOLFVAVE is supplied with 1 x USB lead (power) and 1 x Audio lead (3.5mm jack plugs).

veloped in digital signal processing (see their variable bandwidth filter modules, for example). The plan is to gradually add additional features, which will be downloadable free to existing owners. I'm not in a position to tell you what they may be because SOTABEAMS only want to announce them as and when they are tried and tested but some of the ideas sound as though they will make the WOLFVAVE even more handy around the shack.

Conclusions

I was suitably impressed with the WOLF-WAVE, having not really known what to expect. It packs a lot of features into a small box, is easy to get going and really does enhance the listening experience. It isn't cheap – digital signal processing is non-trivial and requires some serious hardware. However, given that the firmware can be updated as time goes by, I am expecting that this little unit can be of long-term use in the shack, even if the major transceiver manufacturers take some of the ideas on board. And I see the unit as being of particular value if you own and use older radios that lacks modern DSP features.

The WOLF-WAVE is available direct from SOTABEAMS (for £237.50, including VAT) and from authorised distributors.

References:

WOLF-WAVE home page:

www.wolfwave.co.uk

SOTABEAMS:

www.sotabeams.co.uk

G0POT YouTube overview: Link on SOTABEAMS website or direct at:

<https://tinyurl.com/yykk4f2j>



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Fig. 3: Controls, display and indicator.



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WOLF-WAVE

Advanced Audio Processor



Noise reduction is just the start!

WOLF-WAVE does so much more:

- Age-related hearing loss compensation
- Bandpass filtering: SSB, CW & Data
- CW regeneration
- One and two tone generation

Connects between your radio and headphones or loudspeaker

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