

bhi 5W DSP Noise Cancelling In-Line Module



PHOTO 1A.



PHOTO 1B.

What is noise and why do you need to cancel it?

Imagine that you are standing in front of Wembley Stadium at the time of the FA Cup Final that is being played. Fans are cheering on their respective teams, but you are interested in hearing a classical guitarist who is sat on a balcony behind the stadium playing your favourite piece of music. If it were not for the crowds cheering, you would be able to hear him, but due to their exuberance (the noise) you cannot hear the music (the signal). This analogy illustrates the problem of noise.

Noise is an increasing problem on the amateur bands and serves to make weak signals unreadable or at best, partially readable. In physics, the concept of noise is broad, but basically describes some form of fluctuation that has an element of randomness; it contrasts with signal which conveys the required information. The ability to distinguish signal from noise is what is required.

The new bhi noise cancelling In-Line Module is designed to clean up noisy signals and is claimed to work with most radios, so that speech quality in radio and voice communications is enhanced by the reduction of noise. The manufacturer suggest that its use will result in 'stress free' listening without all the unwanted noise and interference. It is the latest in a line of products from bhi to come to the market and is aimed at the amateur radio market, CB users, marine radio users but is also suitable for use with scanners, intercoms and similar equipment.

Out of the box

The bhi NES10-2 Mk4 noise reduction speaker was reviewed in *RadCom* in May 2020 and has a number of similarities to this new



PHOTO 1 A, B, C: Top view, and side views of the module showing the various controls and input and output ports.

unit. Both units use digital signal processing (DSP) algorithms to effect noise reduction. Essentially, this works by analysing the incoming audio signal and then uses sophisticated processing that differentiates speech from noise, following which the noise is attenuated with the intention of leaving only speech. It should be appreciated that the algorithm is aimed at speech rather than other modes with the possible exception of Morse (CW).

On opening the box you will find the module itself, which measures 135mm x 65mm x 46mm, 4 self-adhesive rubber feet, a fused DC power lead and a ALD-001 3.5 mm audio lead, as well as the user manual. The manual is comprehensive, 'user friendly' and clearly written.

The controls

The controls are at either end of the box and comprise an on/off/DSP switch, a status and overload LED as well as a rotary filter switch



PHOTO 2: The unit in action on top of the author's Yaesu FTDX101MP on 3.743MHz.

at one end. At the other end there are audio input, extension speaker and headphone jacks and a DC power socket.

The grey filter knob permits the user to select 8 different settings ranging between 8 and 40dB of noise cancellation. The power requirements are a DC source between 10 and 16 volts providing a minimum current of 500mA that should provide no problem is obtaining in any station (Photos 1A, B and C).

An output level adjustment screw is situated on one of the long side panels. The manufacturer recommends that this is set to ensure that the audio level is the same whether the module is powered on or off; this generally corresponds to a quarter of a turn from the minimum position.

Graham, from bhi, kindly provided me an external speaker and power supply to use with the module to help me evaluate it.

In use

Setting up the module was quick and entirely straightforward. I decided firstly to try it on my Yaesu FTDX101 MP to evaluate its performance on the HF bands and then on VHF and UHF on my Yaesu FT-897D. The 80m band is always noisy and, from my home (QTH), the ambient noise on the band is typically S9 but can be worse (Photo 2). I heard a SV9 station in the noise on SSB

where only every 10th word was vaguely discernible. On activating the unit, the noise reduced considerably, so much so, that I could copy the station clearly and I then went on to work him for a short QSO without any problem.

I had similar experiences on all the other HF bands. Interestingly, 10 metres that has become increasingly active over the last five or six months, presumably due to enhanced sunspot activity, provided me with the opportunity to work a ZS1 station on SSB that was 'pulled out of the noise'. In my view, without the bhi box, this station would have been unworkable.

I went on to try the module on the 2m and 70cm bands. From my QTH, I noted a very useful reduction in noise on 2 metres FM, both on simplex and through my local repeaters, which are GB7RW (Whitby) and GB3HG (Thirsk). Unfortunately, I could not access the Harrogate 70cm repeater GB3HJ from my location, so I am unable to comment on how the unit performed on UHF, although I have no reason to suspect it would not perform as well as on the other bands on which I have tested it.

I have had the unit for a couple of weeks and although I would like to have had it for longer, the deadline for press was such that I needed to report on it sooner rather than later. I have been impressed with its performance and it definitely goes a long way to making

signals that are marginal, interpretable and workable. Careful experimentation is required to select the most appropriate setting and do bear in mind that stronger signals may also be associated with considerable noise, which can be improved using this device.

Like Mike Richards, G4WNC (who reviewed the NES10-2 MK4) I found that noise associated with Morse transmissions could be reduced with the unit and, like him, I noted that lower settings proved most effective.

Summary

The bhi DSP noise cancelling in-line module is a useful piece of equipment to help with noise reduction on the amateur bands. It is easy to use and install and 'does what it says on the tin'.

It costs £159.95 including VAT and can be obtained directly from bhi Ltd, 22 Woolven Close, Burgess Hill, West Sussex RH15 9RR who are on +44 (0)1444 870333 or alternatively via email to sales@bhi-ltd.com.

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