

bhi DSPKR

The DSPKR is the latest offering from the growing range of bhi noise reduction systems.

OVERVIEW. The DSPKR is a compact but very powerful noise reduction system and audio amplifier/speaker combination. Although principally designed for mobile environments, it can also be used very successfully in the shack.

IN THE BOX. No larger than a conventional external speaker box, the DSPKR is surprisingly compact for the range of included features. The box contained everything you need to get going, which is a pleasant change when ever more consumer products are being supplied without the vital connecting leads! The power connection uses a standard 2.1mm coaxial connector and a wire ended and fused lead was included in the pack. The audio connection to the rig was provided using a 2m lead terminated with a standard 3.5mm mono jack. The mounting arrangement was very substantial with a sturdy plastic bracket and a pair of knurled adjustment knobs.

In addition, the mounting bracket had substantial click stops so there was no chance that the unit's position would drift or slip in a high vibration mobile set-up. There was even a pair of screws included to complete the installation.

Also included was an 8-page printed manual. Although this was just stapled sheets of A4, it was good to have a printed manual to hand.

A PEEK INSIDE. A quick look inside the DSPKR reveals that it uses the bhi NEDSP1061 noise reduction module coupled to a powerful 10 watt amplifier and speaker. Noise reduction is achieved using a sophisticated surface mount digital signal processor (DSP) chip. This chip provides analogue to digital conversion and the FFT processing that's used to analyse the signal and reduce the noise. The DSP approach employed here analyses the signal to identify voice components. These are then

allowed to pass unhindered whilst all other elements of the signal are suppressed. The process is fully adaptive, ie the DSP chip constantly monitors the incoming signal and automatically adjusts the noise reduction to match the prevailing conditions. From the operator's point of view, this is a real boon as once the desired level of reduction is selected, the DSP unit handles the rest.

INSTALLATION. The DSPKR's compact size and sturdy mount make installation straightforward and there was a wide range of adjustment from the mounting bracket.



The power requirement for the DSPKR was 10 to 16V DC at up to 2 amps so is ideal for mobile or fixed operation and can be taken from the same feed as that supplying the rig. If you want to use an external speaker or headset with the DSPKR there is a standard 3.5mm jack provided on the side panel. When you plug into this socket the internal speaker is automatically cut off.

OPERATION. Simplicity is the key with the DSPKR, which is great for its intended mobile environment where the last thing you would want is a bank of knobs/buttons to play with. Once connected up, all operations are

controlled by a single push-button on the top panel. Despite its compact size, the DSPKR pumps out an incredible volume of punchy audio. This is helped by its small size as this naturally limits the low frequency response of the speaker.

Selection of the desired noise reduction setting is done using the single push-button on the top panel. On each press of the button the unit steps sequentially to the next highest noise reduction setting. Each press is accompanied by a beep from the speaker, which is useful to confirm the action. When you reach the highest setting the next press sounds two beeps and takes you back to the beginning, ie no noise reduction. You have a choice of either 4 or 7 step noise reduction settings and the switch between 4 or 7 is done by holding the function button pressed whilst powering up the unit. You can also set the unit to operate with just your preferred noise reduction setting. To do this you cycle through the noise reduction options as normal but then press and hold the function button when you reach the desired setting. The DSPKR emits a short beep to confirm selection and it's done. Now the function button operates as a simple toggle between your chosen setting and no noise reduction. This is particularly helpful for mobile operation.

The DSPKR is fitted with its own volume control on the top panel which saves having to alter the rig's main volume control. As with most accessories, getting the input level right is important and the DSPKR includes an audio level LED to aid this process. All you have to do is adjust the rig's volume so that the DSPKR's green LED is mainly on and you're done.

The DSPKR also has a handy power-saving sleep mode that kicks in if no audio is received after a pre-set period. In sleep mode the power consumption drops to mere microamps.

TABLE 1: Filter settings in 7-level mode

Noise Cancelling	Tone Reduction (dB)	White Noise Reduction (dB)
Off	none	none
1	4	9
2	5	11
3	6	13
4	8	15
5	16	17
6	21	20
7	25	24

TABLE 2: Filter settings in 4-level mode

Noise Cancelling	Tone Reduction (dB)	White Noise Reduction (dB)
Off	none	none
1	4	9
2	6	13
3	16	17
4	21	24

IN USE. First test was a look at the busy 80m band with the DSPKR set for the 8-step noise reduction mode. I could hear a difference for each step as I cycled through the range but settings 4 and 5 seemed to be best for this band. At the time of listening, the band was very noisy with signals piled on top of each other. The DSPKR did well to provide some improvement as much of the interference was from other speech-band signals so this is not the best way to see a benefit from this type of noise reduction unit. I then moved on to Top Band and here the situation was very different with an assortment of weak signals that were buried in general noise. In this situation the DSPKR did extremely well and the noise reduction was particularly noticeable and really helped to pull some signals out of the noise. The situation was very similar on the higher frequency bands and the DSPKR consistently did well when the desired signal was affected by general noise. In the vast majority of cases I found that settings between 4 and 6 gave the best results. The maximum noise reduction setting produced a quite different result to most of the others with more audible processing artefacts such as robotic sounding speech and a watery background noise – a bit

like being in the bathroom with a leaky tap! However, even this setting could be useful at times but I found I needed to spend some time getting used to its 'sound'. I found the high setting useful when listening to a



reasonably strong QSO when the maximum setting could be used to eradicate virtually all the noise to give a particularly clean signal. This was helpful when listening for longer periods, eg an 80m ragchew! When you use

the high setting with a strong signal, the watery artefacts disappear and you're left with clean audio with just a minor touch of robotic speech. The provision of a headphone/external speaker socket was useful but you do need to watch the volume levels when using headphones as there's a lot of power available from this socket, but no limiter. The socket was also wired as a 3.5mm mono so your stereo headphones will only reproduce through one earpiece.

SUMMARY. bhi have a proven pedigree in noise reduction and the DSPKR builds on this to deliver a particularly compact and powerful unit that works well in both mobile and base station applications. The very simple single button operation worked well and the facility to store your favourite setting helped make operation of the DSPKR a real breeze. Noise reduction performance was excellent with useful improvements available over a wide range of listening conditions. The noise reduction settings were particularly well chosen and all were usable under the appropriate conditions.

RRP is £154.95 including VAT and the unit is available from bhi Ltd on 01444 870333 or any of their authorised dealers.

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