

# Phonak Invisity

Looking like something out of Bond film, nothing comes smaller than this in-ear prompter.

PATRICK MORVLYTH plugs in and walks around a bit...

The Phonak Invisity is reputed to be the smallest in-ear RF receiver in the world so I was somewhat mystified when a shipping box weighing several kilos arrived at my door. As I unpacked it this did begin to make some sense, since such a small device does need a bit of support. Phonak is a Swiss company with the best part of 50 years' experience in hearing aids that 20 years ago branched out (as Phonak Communications) into various related markets within the aviation and security industries, tour guiding, etc. It is useful to keep this in mind when looking at its approach to the studio and broadcast world, which shares some similarities with the American company Comtek, a virtual byword for talkback in the US — both use VHF frequencies for studio communications (see side bar).

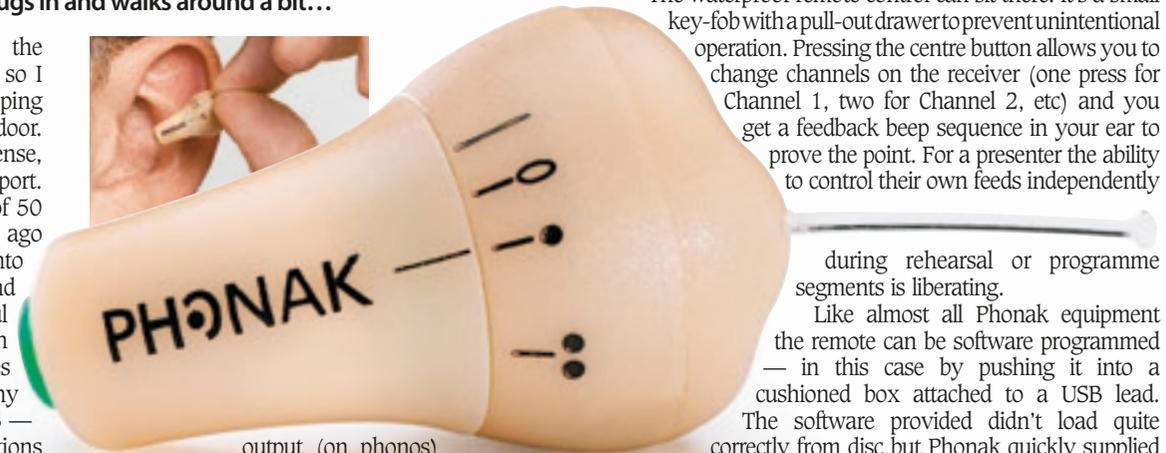
The Invisity receiver itself is truly minute. Whereas the typical earpiece and moulding is sometimes jokingly referred to as a 'prawn'; this one is a tiny pink shrimp. It weighs 1.5g, is 12mm diameter and 19mm long. There is a 10mm translucent thread that sticks out but it isn't an antenna, just a way of pulling this minuscule earplug out of the ear canal, where it sits. Once inserted the receiver is invisible from the front and could only be seen, perhaps, in a profile close-up. Even then you would need to look very carefully.

When not in use the shrimp drops into a plastic screw-lid pill-box — it is so small that losing it needs to be considered seriously — and the box fits into a pocket in a good quality organiser-style zipped wallet. Also in the wallet are additional pockets for spare batteries, a dispenser for clean ear-wax filters to fit on the Invisity's acoustic coupling snout, and even a remote control.

Digging into the shipping container I found a half-rack width transmitter (TX300V), a substantial antenna system and a programming device for the remote control. If all this seems a little complicated then you need to know that besides the obvious single channel option it is possible to run up to four TXs and to have Invisity receivers that can be switched by the remote control between any of the four channels — I believe there's even a 7-channel option now. That means that a choice of, say, programme, general TB, IFB, private line, etc can be made by the presenters themselves. This does make for a very adaptable system.

The Invisity borrows extensively from Phonak's hearing aid technology in powering and support. Local control is by twisting the rear of the unit — On quiet, On loud, Off, and Open to allow you to insert a small zinc-air hearing aid battery. Battery life is listed as 13 hours, which is convenient for a full day's use. Good eyesight and deft fingers are essential for operation, but the build-quality is truly Swiss.

So how does it all work? The transmitter TX300V can accept two inputs, one unbalanced on phonos, the other on a Neutrik Combo and thus able to accept XLRs or 0.25-inch balanced jack. This feed can have P12 phantom power (but not P48) for microphones. The two inputs are controlled by a single knob that acts roughly as a balance control. The mix is available as an



output (on phonos)

and is also passed on to a 'contour' circuit (essentially an HF cut) and a compressor, then via a level control to a 3.5mm jack socket on the front panel (for headphone monitoring) and to the VHF modulator. A test tone can also be injected into the signal line for ident purposes.

Input levels and the processed mix have associated VU style LED meters. In practice setting up of the audio wasn't as easy as it should be. The balance pot gives +3dB gain one way and -20dB (before diving to about -60dB) the other. Since 0VU on the meter is maximum signal before distortion, and the nominal line input level for Input 1 is 0dBu you

need to pad the input for normal dynamic range studio signals. The meter law is such that in reality only peaks register at all. Likewise Input 2 gives a choice of +10dBu or -10dBu nominal gain — once more a rather unhelpful range.

However once inputs are set to something workable controlling the mix level of the compressed signal was relatively simple to adjust, with the mix level meter presenting a more useful display. The compressor is on by default, and probably best left on, but it is possible to defeat it by a front panel control sequence.

The TX has three power settings for the RF output and a selection of four preset channels (which can be locked) from a choice of 20 programmable ones. There is a programming RS232 input to set actual frequencies and some other internal parameters on an initial installation basis. Powering of the TX is by a 12V external converter 'lump'.

And to listen to? Well the Invisity is sold as a prompting and comms device, not an in-ear monitor. It is a narrow-band FM device and thus the audio bandwidth is limited to 200Hz-4.5kHz and signal to noise is 41dB. Level is more than adequate for news studios but would struggle in a noisy music gig. On a walk test in my 50sqm barn the signal was always clearly audible with just the odd multipath buzz as I moved around. With properly balanced audio the compressor worked well but with high dynamic range material (such as a TB mic with no AGC) the slow release time was apparent. But if this seems in the

least bit critical you have to remind yourself just how minute and self-contained this receiver is — nothing in your pocket, no dangling aerial, nothing visible at all. You quickly take this marvel for granted.

Actually nothing in your pocket isn't quite true. The waterproof remote control can sit there. It's a small key-fob with a pull-out drawer to prevent unintentional operation. Pressing the centre button allows you to change channels on the receiver (one press for Channel 1, two for Channel 2, etc) and you get a feedback beep sequence in your ear to prove the point. For a presenter the ability to control their own feeds independently

during rehearsal or programme segments is liberating.

Like almost all Phonak equipment the remote can be software programmed — in this case by pushing it into a cushioned box attached to a USB lead. The software provided didn't load quite correctly from disc but Phonak quickly supplied an improved version that correctly reported that the review system was working on the UK licence-exempt VHF frequencies (173.800MHz, 174.200MHz, 174.600MHz, 175.000MHz). The possible range is 158MHz to 220MHz in 7 band options with a channel spacing of 125kHz. From their tour-guiding experience Phonak finds that it suffers no intermod or mutual interference problems with these, so can run multiple channels safely.

While VHF is less fashionable than it was, it does have the benefits of giving fewer dead spots with a non-diversity system than UHF, and of posing no risk of interference with 600MHz radio mics. How busy the spectrum is in any particular area is a case of local surveying but the system can be switched over a 7MHz range to find a quiet (and legal) slot. For in-vision prompting and comms Invisity fits usefully into a niche that doesn't have any other direct competitors that I'm aware of. ■

**PROS** Truly minute; integrates well into a VHF studio talkback system.

**CONS** Only available in VHF bands which may be rather crowded in some areas; uses a narrow band transmission system that has limited bandwidth and noise performance.

**EXTRAS** Included for review was a Phonak iSense Classic receiver. This is intended for wired earpiece use in studios where invisibility is not an overriding concern. Rather as Comteks are widely used in the US, so this receiver can be used to provide talkback feeds to production and crew, picking up the same (single) VHF channels as the Invisity, thus making an efficient, unified system.

The iSense carries on the minuscule theme by being another keyfob (66mm x 29mm x 12mm and just 26g) with an integral rechargeable lithium battery that will run the unit for 10 hours (recharge is 2 hours). It has a slide on-off switch, nudge-button volume control and a multicoloured indicator to show battery status. There is a 2.5mm stereo jack socket and a 3mm coaxial DC charging input. Once again, I know of no equivalent talkback receiver that comes anywhere near as small, light and convenient.

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