

Shure PSM700

Trevor Cronin takes the monitors off the stage and puts them in his head.

I first experienced the difference that in-ear monitors can have on an artist's performance many years ago when I was touring England with American R&B pop artists 'Color Me Badd'. This act consisted of four 'buff' blokes, with a large backing band, singing sweet harmonies to thousands of hormonal teen-ettes. One night I measured the audience noise alone at 110dB! As you can imagine, they were always having trouble hearing each other, even with our very loud monitor system and a very experienced monitor engineer. I suggested they try out this new system that I'd come across – 'in-ear monitors'. At sound check the wedges were switched off and the lads were fitted out with the new system. They worked with the engineer until they had the right mix and did a couple of songs. They were all very

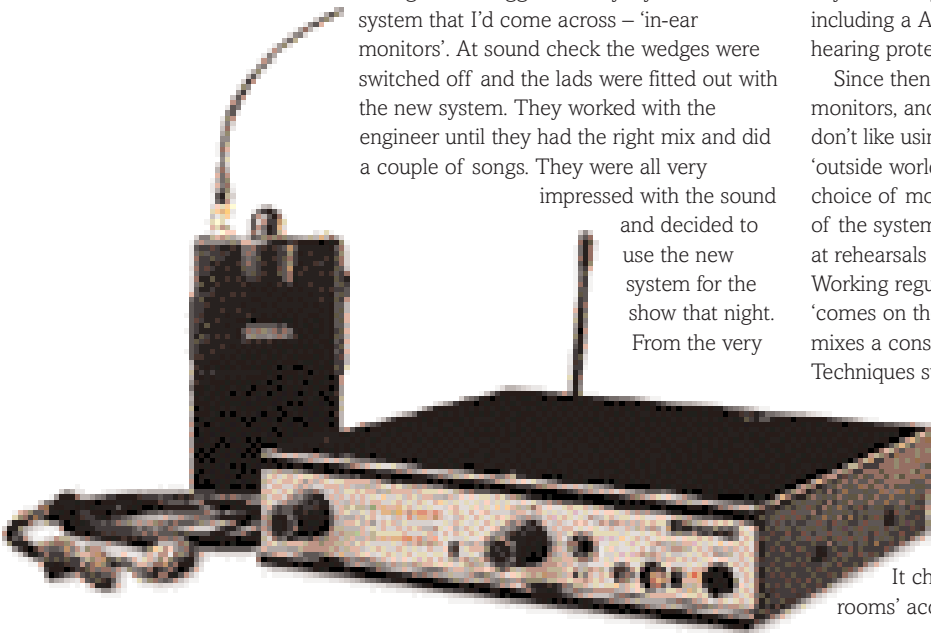
impressed with the sound and decided to use the new system for the show that night. From the very

first tune the difference out front was substantial, the clarity of the vocal sound had been improved a huge amount – a bit like taking cotton wool out of your ears! The harmonies also were much tighter. The trick is, by reducing the high gain stage monitor spill into the vocal microphones (which has a smearing comb filtering effect), the overall mix's clarity was really allowed to sparkle. After the show the organisation was so impressed with the sound they decided to buy the system, which in those days was very expensive at 4,000 pounds (A\$10,000) each including a Aphex Dominator compressor, used for hearing protection.

Since then I have worked with many artists using in-ear monitors, and it always improves the sound. Some artists don't like using them, as they feel too isolated from the 'outside world'. I suspect this has a lot to do with the choice of monitor engineer rather than the performance of the system. You really need to use in-ears a few times at rehearsals to grow accustomed to the difference. Working regularly with the same monitor engineer that 'comes on the journey' with the performer, and who mixes a consistent sound every show will always help! Techniques such as the use of ambience microphones (to give the in-ear mix a more natural feel) and positioning instruments correctly in the stereo field are also useful in reducing that feeling of isolation.

The great advantage over conventional monitoring is the consistency of the sound.

It changes very little from venue to venue, as the rooms' acoustics only have a minor effect on the



A Few Points From Jands Electronics

1. The number of total frequencies in a given venue depends on a number of factors – how many wireless channels are being used (PSM and radio mics) as well as other broadcast and non-broadcast borne interference. Jands offer a service to their customers to assist in frequency selection and compatibility.

2. The P7T (as well as all PSM series wireless transmitters) have in-built 10:1 compressors – the benefits are two-fold – this stops overmodulation of the RF when there is a lot of transient activity in the signal, as well as providing a degree of dynamic control for the audio signal itself.

3. The system is set up to limit at 115dB SPL in the ear canal when used with the E1 earpieces. Users can look up the Australian Standard for how long it is recommended to subject your ears to SPLs of that level.

4. Trevor mentions a certain lack of bass in the earpieces.

There are a couple of determining factors concerning the amount of LF activity. The first is the fit (and seal) of the earpieces – the earpieces rely on a proper seal for extended bass performance. Sometimes all it takes is to jiggle the pieces while in your ears to ensure the seal is effective. The second is a fact that all earpieces, regardless of manufacture, do not proportionally have the same air moving effect as a pair of 18" loudspeakers. This has more to do with the associated vibration that our brain expects with high levels of LF replay. This is why many engineers add vibration actuators (also known as but thumpers or shakers) to the system. These devices typically have a 40Hz resonance, and thus couple nicely with the LF response of earpieces and produce that familiar 'thump in the chest' that we all associate with a kicking system.

5. If you need increased range, you can add directional

antennae which can add an additional 7dB of RF gain. With that extra boost, we have seen the system operating over distances in excess of 300m! (The maximum distance will vary depending on our surrounding RF environment.)

Nick Orsatti, Jands Electronics.

overall monitor sound. Over time this greatly increases the performer's comfort zone on stage.

Shure's PSM700 is a 16-channel selectable UHF transmitter and receiver system, assignable to two groups (making a total of 32 possible frequencies, but only 16 may be active simultaneously). It comes with a rackmount kit and individual protective storage cases for the receiver and earphones, as well as a 9V alkaline battery (offering between four to six hours of life) and ten foam ear inserts.

The System

The P7T transmitter is packaged in a strong looking, steel 1.5kg half-rack space box. The front panel incorporates the power switch, an eight-LED stereo input meter, input level control, channel selection and mono/stereo select switches. For connecting a set of phones there is a high output internal amp with a level control, 6.5mm and mini jack output connectors.

The rear panel has a pair of Neutrik Combo main input connectors which accept either female XLR or 6.5mm jack inputs with an associated pad switch. There is a BNC-type connector to which the small antenna (or a cable to a larger multi unit antenna) is fitted. Two balanced 6.5mm loop-out connectors (used, for example, for connection to a regular monitor system) are also on the back of the unit. For international use, the Internal power supply is switchable between 120V and 230V AC.

Shure's P7R Receiver is housed in a black satin finished steel box – just a little larger than a cigarette packet. It is fitted with a reversible belt clip. The on/off and volume controls are easily reached on the top of the unit, while a pan control is positioned on the side. LEDs indicate power on, low battery and when the pack is receiving signal. The front has a swing-out door which allows easy and quick battery access. Also in this compartment are group/channel frequency selection controls, a switchable limiter, and a treble boost switch.

The system I reviewed came with a set of Shure's custom made E5 earphones [see 'Bits & Pieces' box for

PSM Bits 'n' Pieces

There are three different PSM systems: PSM700 (flagship line – frequency agile); PSM600 (fixed frequencies); PSM400 (new cost-effective solution – not yet available).

All systems come with a choice of earpieces: The Shure E1 transducers – single driver, generic or custom mould operation. The Shure E5 transducers – dual driver for critical high SPL operations – generic or custom mould operation.

There are a number of custom earpiece manufacturers offering custom solutions (at a price!). It might be worth noting that Jands Electronics have set up an association with a hearing aid mould manufacturer to produce custom moulds for the Shure E1 and E5 earpieces. Although based in Sydney, they have a network of audiologists around the country to take the mould impressions of your ears.

The contact details are as follows:

Mr Wayne Borg

Ternen Prosthetics Pty Ltd

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more]. They were developed in conjunction with well-respected companies Westone Audio Labs (the ear canal mould specialists) and Ultimate Ears earphones. These are a dual driver design and come with disposable universal-fit earpiece tips. You can also use more robust rubber tips or, for more comfort and better frequency response, custom made moulded earpieces.

Lending an Ear

The system has a rated operating range of about 100m and during the test I confirmed that figure – it even worked fine on the other side of a brick wall! A handy feature is the PSM700's frequency compatibility with all other Shure wireless systems, such as microphones and guitar systems. RF reception seemed rock solid, I didn't hear any interference or taxi controllers during operation.

The belt pack is a little larger than some other models, but remains low profile enough for all regular use (unless, of course, you perform in a sequin G-string...). The belt pack has three modes of operation – mono, stereo and mix mode. In mix mode, the belt pack receives two discrete mono channels of audio, with the audio sent to both the left and right earphone. By adjusting the balance knob on the pack you can control the relative level of each signal, rendering one softer and the other louder in both ears.

This enables you to have, say, vocals in one channel and the rest of the band in the other. The performer can then adjust the mix to suit their tastes of vocal balance. The in-built limiter acts as a welcome safeguard against nasty accidents. Although, you still need to be as careful using this system as with any other high level monitoring environment. Many hours of exposure to high levels of sound is going to eventually damage your ears. This system will happily run to the point where you find your brain oozing out your ears, so be careful.

The universal, one-size-fits-all earpieces worked well, were comfortable and, if needs be, nice and easy to pull out! Used on their own they sound loud and clear, although a little lacking in the bottom end frequencies in my opinion. Up on stage, with the front of house sub bass speakers operating, they sound great – clarity without the ear fatigue. Every hard working performer should check out an in-ear monitoring system, it can make a very big difference to your show. This type of audio technology has become a lot smaller, lighter and better sounding than back in the days of 'Color Me Badd', and a whole lot more affordable! As for Shure's PSM700? Well they've certainly done their bit to provide a bullet proof, idiot proof, good sounding, flexible system, at a reasonable price. Find out what it can do for your sound.



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Price

• PSM700 (with E1 earpieces) \$5800

PSM700 (with E5 earpieces) \$6700