

“These are absolutely

SUPERB

small speakers.”

Reprinted with permission from

AUSTRALIAN
HI-FI

“Close your eyes when listening to Paradigm’s Mini Monitors and you’d swear you were listening to a much larger (and much more expensive!) pair of speakers ...”

by Greg Borrowman

Canadian manufacturer Paradigm seems to have had more than its fair share of successful speaker designs over the past decade but if you look carefully, it is because the company has focused very carefully on providing the best value for money it possibly can, driven by the cost efficiencies that derive from manufacturing almost all your own components in house ... including cabinets. And if you need to hang a figure on the word ‘successful’, how does more than 80 product awards since 1990 sound?

Paradigm’s Mini Monitor is a great example of the company’s approach. It uses a similar bass driver in the Monitor 5 and Monitor 7 designs, which in turn share a spider, voice coil and voice coil former with the Monitor 3 and Monitor 9. The same approach applies to the tweeter. The 25 mm pure titanium dome tweeter used in the Mini Monitor is identical in every respect to the tweeter used in the

The New Mini Monitor

(Improved over version reviewed for even better sound.)

Monitor 9. In fact, ALL the Monitor series designs including the CC-350 centre channel and the ADP-350 reverberant soundfield surround speaker use the same tweeter. Again, this means that Paradigm’s cost-efficiencies are way high.

By now, you may have twigged to the only question that hangs over all this talk of efficiency and productivity gains. The question is this: Given that a company is efficient, is it passing on the gains of this efficiency (that is, lower prices overall or higher technology at a given price point) on to consumers? This is always a tough call, and invoices comparing sound quality and build quality against other comparably priced speakers from other manufacturers and, to a certain extent, looking at the street cred of the company within the industry itself, I’d say that if you look first at Paradigm’s



80+ product awards, its almost invariably favourable reviews and then at the prices of its various loudspeakers, you'll have a fair inkling of the answer where Paradigm is concerned ... and that's before you start on the more arduous task of comparing against other brands.

"Paradigm's Mini Monitors should be on the compulsory 'listening list' for all speaker designers, because they are an object lesson in how to get big sound from a little cabinet."

THE EQUIPMENT

A very obvious distinguishing feature of the bass/mid driver used in the Mini Monitor is that the cone is semi-transparent so you can see through to the spider and basket beneath. Peer through and you'll see that Paradigm has nothing to hide in the quality department, because the driver is exceptionally well made. It has a heat dissipating die-cast chassis, for improved power-handling capability. The magnet is quite large for the size of the driver and is completely sealed without rear venting or a porous centre dust cap.

The bass driver used is rated by Paradigm with a diameter of 165 mm the effective cone diameter is only 122 mm. If you include the rubber roll surround in the measurement, diameter increases to only 142 mm, still short of Paradigm's claim. This is because Paradigm uses a method of measuring diameter that's in common use in the industry, which is to rate the driver diameter by stating the distance between the bolt-holes used to mount the driver to the front baffle. The effective cone area (ECA) which is based on the real cone diameter that must be used to calculate Theile/Small equations for box/port size therefore works out to be 116.9 cm².

The bass driver crosses to the 25 mm dome tweeter at around 1.8 kHz (nominal) via a third-order crossover network. The

tweeter (also made by Paradigm) has a dome that Paradigm says is made of pure titanium (hence the PTD trademark). The voice-coil former is also made from PTD. As with most modern tweeters, the gap between the coil and the magnet is filled with ferro-fluid, which increases sensitivity, power-handling ability and aids damping.

"Bass is punchy and fast with a satisfying bass response and an upper bass sound that's gratifyingly forward (which is what gives it that punch) without being so forward as to muddy the sound of the upper bass, or confuse the perception of lower bass lines, such as with bass guitar."

The tweeter has a phase correction/dispersion array positioned immediately above the dome surface, which has the side-benefit of protecting the dome from mechanical damage (should you own a curious cat, or small children ... or both.)

The Mini Monitor's cabinet is a mite unusual. Whereas most manufacturers are using medium density particleboard (otherwise known as MDF) in cabinet construction, Paradigm is using a 19 mm thick low-density material, commonly called 'chipboard'. This material is less expensive to buy, of course, but it's also more difficult to cut cleanly and doesn't tend to take glue or hold fastenings as well as MDF. However some manufacturers —of which Paradigm is obviously one—believe chipboard has superior acoustic qualities because it tends to absorb vibration better than MDF, thus reducing panel resonance. In North America, Paradigm is in good company regarding the use of this material in its cabinets, because most US speaker manufacturers (including JBL) use chipboard in preference to MDF. Paradigm parts company with other

North America manufacturers when it comes to damping material, however, because the Mini Monitor is filled with a synthetic non-allergenic fill, instead of the hazardous fiberglass material used by most others. (In the US fiberglass is listed as a potential carcinogen.) The cabinet, despite being relatively small (330 x 210 x 250 mm H,W,D) is made even more rigid by the inclusion of a full '8' brace in the centre of the enclosure. Enclosure volume is around 12 litres.

"Midrange sound quality mirrored that of the bass — smooth and uncoloured ... a beautiful fluid sound."

The port on the Mini Monitor exits through the rear baffle, and is moderately large for such a small enclosure, with a diameter of 50 mm and a length of 170 mm. The port tube is made from cardboard, at both ends of which are fixed plastic flares to reduce the possibility of 'chuffing' and other extraneous noises.

The bass driver is fastened with eight posidrive-headed particleboard screws, rather than the usual four, and the tweeter is mounted on a sub assembly that allows its four fasteners to be positioned well away from the large cut-out for the tweeter. The use of this plate also allows the tweeter to be positioned very, very close to the bass/midrange driver which, all other things being equal, will result in excellent imaging and no vertical image displacement through the crossover region.

The crossover network is relatively simple, consisting of two 10 W wirewound ceramic resistors (8.6 ohm and 2.3 ohm), an air-cored inductor wound on a square plastic former, an iron-cored inductor (again wound on a square plastic former) and two hundred volt bipolar electrolytic capacitors (4.7µF and 33µF). The two coils are cross-mounted, for minimum interaction—a nicety that is very rare in a budget speaker design. All crossover components are mounted on a phenolic PCB that is fixed to the rear of the rear terminal plate. This plate is home to a

single pair of gold-plated 4 mm banana-capable multi-way terminals. Paradigm says the Mini Monitor's crossover is a third-order electro/acoustic design.

"... excellent dynamics, without any compression."

LISTENING SESSIONS

Close your eyes when listening to Paradigm's Mini Monitors and you'd swear you were listening to a much larger (and much more expensive!) pair of speakers. Bass is punchy and fast with a satisfying bass response and an upper bass sound that's gratifyingly forward (which is what gives it that punch) without being so forward as to muddy the sound of the upper bass, or confuse the perception of lower bass lines, such as with bass guitar. The bass is surprisingly deep for the size of the cabinet. The overall bass sound is warm and resonant ... very easy to listen to, in fact. It wasn't perfect. Listening to a chromatic scale on piano, for example, the Paradigm exhibited minor localized tone/volume differences around C^o (32 Hz), E2 (82 Hz), G2 (100 Hz) and B4 (493 Hz), but was otherwise quite smooth.

Midrange sound quality mirrored that of the bass—smooth and uncoloured, with an overall warm quality. Listening to female voice (Lisa Nilsson, *Who's Sleeping in my Bed?*) revealed a slightly subdued vocal line. What's most noticeable about the midrange is that it doesn't have 'pin point' imaging. Instead, sounds seem to 'spread' slightly between the left and right speakers, giving an impression of a wall of sound, rather than isolating performers in separate spaces between the speakers. This meant the Minis tended to 'gloss over' production techniques, so you can't hear the recording engineers 'turning knobs', and it's difficult to pick up production faults ... but then who wants to?

Listening to a picked acoustic guitar for example, (Martin Strange, *Bach Prelude*) the attack was not quite as 'edgy' as in a live performance. Violins, on the other hand, were slightly softer (Saint Saens, *Romance in C Major*), with a beautiful fluid sound.

The Paradigms sounded lovely at low volume levels, but were also able to go very loud, without any doubling in the bass, and without the mids and high frequencies becoming harsh. The result was excellent dynamics, without any compression.

"The Paradigms sounded lovely at low volume levels, but were also able to go very loud, without any doubling in the bass, and without the mid and high frequencies becoming harsh. The result was excellent dynamics, without any compression."

CONCLUSION

Paradigm's Mini Monitors should be on the compulsory 'listening list' for all speaker designers, because they are an object lesson in how to get big sound from a little cabinet. These are absolutely superb small speakers.