



PMC MB2se

HAVING INTERVIEWED PMC FOUNDER PETER THOMAS FOR THE LAST ISSUE OF HIFICRITIC, KEVIN FISKE FOUND HIMSELF INTRIGUED ENOUGH TO TRY THE COMPANY'S BIG STANDMOUNT SPEAKERS

More than two hours of conversation via Skype with Peter Thomas, co-founder and managing director of loudspeaker manufacturer PMC (see interview, HiFi Critic Volume 14, Issue 2) left me resolved to re-acquaint myself with the company's products.

PMC began life 30 years ago designing and manufacturing active speakers for broadcasters, recording studios and film production suites when Thomas left the BBC after more than a decade as a senior engineer to found the company with the late Adrian Loader. In 2000 PMC launched its first purely domestic design, the FB1 floor stander and is now as equally well known globally both in the domestic and professional studio settings.

Readers of the interview in the last issue will have noted that Thomas is a persuasive advocate for transmission line technology; indeed every model

in the company's domestic and professional ranges uses the technology. As Thomas observes, a lot of people approve of electrostatics for their lack of distortion, but it's impossible to generate the sound pressure with them that a studio needs, and bass response is limited. Transmission line done well generates deep bass at high pressure levels, and controls low-end distortion more effectively than infinite baffle or ported designs — in fact over a range of nearly three octaves. The relative reduction in distortion un-masks the midrange. As PMC would have it, this gives an open quality to the sound that

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approaches that available from electrostatics, but combines it with proper full-range performance and high SPLs. Thomas concedes that the downside of transmission line is that it is ‘a pig, a real pig, to design for’ and that PMC would drop it tomorrow if it could achieve the same or better results with an alternative loading method.

Back in 2000, I was one of the early customers for PMC’s FB1s. I enjoyed them for a couple of years, then changed to the much larger IB1s, a speaker originally designed for studio usage but also available in domestic drag. With the clarity of vision lent by hindsight, I should have stuck with the IB1s much longer: they weren’t the cause of my dissatisfaction with the system; the amplifiers were. Impetuosity – and not for the first time – made me pay the stupid tax.

Some 20 years on, I decided that if I was going to ask PMC to go through the cost and effort of sending some current generation speakers to try, I’d better make it worth everyone’s while. No pussyfooting around, then, with dinky stand-mounters or even larger floorstanders from the sub-£14,000 domestic range. What I asked to borrow was a pair of MB2s, now in their latest ‘se’ variant.and around 60 kg each. Plus their 17 kg stands. I also asked PMC, the UK distributor for Canadian amplifier maker Bryston, to loan a pre-and-power combination of solid state amplification. The MB2 is a claimed 90 dB/Wm efficient and presents a very fair eight Ohm load, dipping only to 5.9 Ohms at 110 Hz. I was intending to use my own 211 integrated tube amplifier with them and had expectations of a good result. However, it would have been foolish not to have a solid state back-up – you know, just in case.

A three-way design, incorporating a 310 cm woofer, a 7.5 cm midrange and a 2.5 cm tweeter in a cabinet 870 (H) x 380 (W) x 535 mm (D), the MB2se sits on a purpose-made stand for an overall height just shy of 1.3 m. When first placed onto the carpet in the listening room, the household was somewhat over-awed by their sheer imposing bulk of the speakers, but perhaps it is a reflection of the audio quality that attends this consequent loss of floor area that after less than a week we no longer noticed the speakers’ hulking presence.

The MB2 cabinet is made in the UK from 25 mm high density fibreboard with a 50 mm front baffle. All elements are CNC cut and then hand assembled. Internally, the transmission line, also fabricated from HDF, has a decent operational length of 2.4 m, and is necessarily folded back and forth adding consequential and very substantial bracing to the cabinet. Even at listening peaks of 97 dB (A weighted), measured three metres from the baffle plane, the cabinet walls of the PMCs exhibited only

modest vibrational energy, a finding in accordance with the low levels of box colouration we heard.

The review samples were a broodingly dark macassar veneer on the sides, top, bottom and backs, but presenting a satin black baffle to the listening position. This finish has been discontinued by PMC but – electro-mechanically and in every other respect – the review samples were representative of the current product.

This is the latest version of a model that began life as the MB1 in 1993, launched just two years after Thomas left the BBC to form PMC. It was designed as a mid-sized studio monitor and has proven very popular with musicians and studios all around the globe, no doubt because the essential concept was so right from the outset. Over the years and the upgrades separating the ‘1 and the ‘2se, the primary changes have been to drivers, the crossover, and to internal stiffening, but the basic form-factor remains essentially the same. The MB2 is available as an active speaker for an additional £10,000 – and in hard-wearing studio black as an active or passive box, too, for marginally less than the domestically-dressed version.

Custom drivers

The drivers fitted to the MB2 in its se form today are worthy of note. The tweeter is made for PMC by Norwegian company SEAS and uses a treated fabric dome with ferro-fluid cooling. The 75 mm mid-range driver is manufactured by PMC entirely in-house, in Luton. It has a hand-doped linen dome and weighs a thumping 10 kg.

The 310 mm woofer is made for PMC by Dorset driver specialist Volt. Superficially it resembles Volt’s OEM series of exoskeletal drivers, but some of its Thiele-Small specifications are quite different. That’s primarily due to the much stiffer cone specified by PMC to satisfy the more arduous requirements of transmission line loading, rather than infinite baffle or ported cabinets. Well-matched, the driver and the transmission line allow a pair of MB2s to deliver a bass response that – with suitable recorded material – sounds positively titanic.

As is PMC’s usual practice across its range of speakers, the crossover is 24 dB per octave fourth order, with crossover points at 380 Hz and 3.8 kHz. Externally the MB2 offers six substantial gold-plated screw terminals for tri-wiring, with flat gold-plated links to enable less ambitious cabling schemes. The specified frequency range is 20 Hz to 25 kHz.

Since the transmission line is such a key part of what the MB2 is about, a quick refresher on this less common method of woofer loading may be welcomed by some readers. It was first described in 1965 in a *Wireless World* article by A R Bailey who built on research from the 1930s into labyrinth





design. The first commercial transmission line speaker was briefly manufactured by Radford, but it wasn't until John Wright of IMF Electronics further developed Bailey's ideas that transmission line speakers became widely available, including in the USA. Readers old enough to remember that first generation will no doubt recall slow, plodding bass, and cabinets the size of American refrigerators. MC recalls selling IMF, TDL, Ferrograph and Cambridge Audio transmission lines during his time at Audio T, Dryden Chambers.

Thomas says the ideal transmission line design would absorb all the frequencies emanating from the rear of a woofer, but that would require a line so long as to be quite impractical. Compromise requires that a short line—a quarter wavelength of the lowest desired frequency—is so configured by the use of specialist acoustic filling as to absorb the higher frequencies but not attenuate longer wavelengths. The line therefore operates as an acoustic crossover, below which frequency the woofer is loaded by the mass of the air-column.

The specified length of the line inverts the rear output of the driver by 180 degrees so that it now exits a front-mounted port in phase, creating in effect, a second woofer. The line loads the driver over nearly three octaves, reducing cone excursion and thus distortion. PMC's claim is that 'all the rear-output upper-bass is absorbed' for a clean output that doesn't blur the midrange while the lower bass is extended in a controlled and unforced way.

What hobbled early transmission line designs was only partial understanding of the physics, along with the non-availability of consistently specified acoustic absorptive materials. After some 30 years of developing transmission line, PMC can be said to have properly mastered both challenges.

Sound quality

Say the word 'monitor,' and many people will immediately assume the speaker being described sounds tight and controlled; forensic, rather than possessing those qualities that support the illusion of musical performance. The MB2s demonstrate the truth that accuracy and low distortion on one hand and dynamics and musicality on the other are in fact not mutually exclusive, but perfectly comfortable, indeed, complementary, bedfellows. Thomas says that PMC's studio (AKA monitor) and domestic ranges are voiced in an identical way, with the same sonic aesthetic and same performance goals in mind.

I first drove the MB2s with my own integrated tube amplifier: the results at low to medium listening levels were excellent, but the 211 tubes ran out of puff when asked to go loud, and so I switched to the Bryston 3B Cubed power amplifier (200 Watts into eight Ohms) and BP-17 Cubed pre-amp that PMC had loaned. The Bryston combination proved to be a real surprise, very much more sophisticated than the Bryston BP-25 pre- and 7B monoblocks I owned back in the early 2000s.

By day seven, the coarse part of the run-in process seemed to be pretty much complete. Just to make sure, I put Steve Martland's *Horses of Instruction* into the CD transport and briefly wound the volume on the BP-17 up to the three o'clock setting. The result was a visceral, full-body experience, verging on being physically disorientating as the slamming bass massaged the internal organs of those daft enough to stay put.

PMC claim a sustainable non-compressing limit of 124 dB, which might be useful in a studio setting, but I was more interested to find how the MB2s acquit themselves against the audio benchmarks of dynamic agility, tonality, timing, and the fourth essential you-are-there element, room pressurisation or dynamic power.

At first listen, some might find the MB2s a bit perplexing. Depending on the recorded material, where, it might be asked, are the low-end pyrotechnics that result from this much vaunted transmission line? But that, of course, is the point of properly conceived speaker. It should be by turns self-effacing and assertive, appropriate to the material being played. To draw attention to itself all the time would be evidence of poor execution.

Thus, and as a result of the first material I chose to play, what I noticed initially was *not* the bass, but a notable openness in the mid-band, overall very low distortion levels, wide and even dispersion, along with an arresting and wholly addictive quality of depth and precision in imaging. Over the course of multiple listening sessions, I came to the view that the MB2's PMC's 75mm mid-range driver, set within a deeply contoured milled aluminium wave



guide that aids both dispersion and reduces baffle vibration, is truly a work of exceptional design, maturity and refinement. It is able to transcribe recorded detail with benchmark levels of agility, tonal veracity and ultra-low distortion.

Dorothea Roschmann is surely the complete soprano. On her Harmonia Mundi recording of Handel's German arias she shows a depth and substance to her voice that recalls that of the wonderful Janet Baker. The ease and surety with which she sings makes listening to her a simple, unstressed joy, and while I have heard the recording many times through other speakers, the MB2s stood her up as an almost tactile 3D presence in the listening room, miked from mid-distance, with every inflection, dynamic subtlety and dense tonal colour rendered with unforced, uncoloured clarity. The MB2 woofer-to-midrange crossover point is 119 Hz above the 261 Hz, middle C, deck of the average soprano's range. but the PMCs drew no attention to the handover.

Indeed, from the listening position the integration of all three drivers (four if you count the transmission line port) is exceptionally clean. On recordings where the engineers have taken great care, and the producer has been humble enough not to impress his or her own stamp on their work, what the PMCs present is a mesmerising performance space where events just come and go from blackness, convincingly coherent and seemingly utterly disconnected from the speakers.

Easy to position

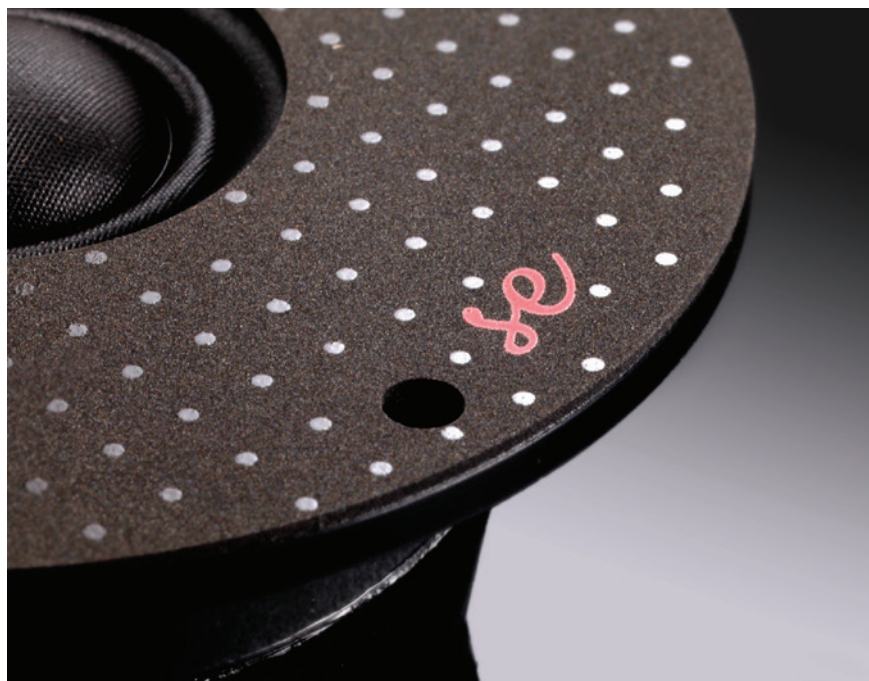
Achieving what I found to be the optimum positioning for the MB2s in my listening room proved surprisingly easy. I first tried them with the baffle plane out into the room by 1.7 m and its centreline 85 cm away from the side walls. By degrees, I then pushed them back and sideways—the spikes had been deliberately left off to make these adjustments possible—until, and just for the sake of an extreme test, they were backed almost as far into the room corners as they would go. The imaging perspective flattened, but while I also expected the bass to vigorously excite room nodes and become overpowering in this position, it did not do so to anywhere near the anticipated degree.

The MB2s give a remarkable degree of freedom from the tyranny of the sweet spot. When they were placed in what was determined to be the optimum position it was possible to sit a third of the way towards the speakers from the listening position, with our backs to the side walls of the four by six metre room, and perceive a tonally even performance even though we were looking effectively almost sideways in to the sound stage, hearing instruments and voices still arranged in

width and some depth. I mentioned this finding to Peter Thomas who confirmed that this remarkable dispersion performance is a deliberate response to the needs of engineers and producers who might well be ranging over a lateral distance of 12 or more feet while working at a console and don't want to have to keep returning to the centre spot in order to hear accurately the result of the changes they make.

Is a grand piano the toughest test of a full-range speaker? Certainly no other single instrument spans a range of nearly 4,000 Hz and demands such an ability to react to percussive transients at speed, render harmonic detail, and to decay notes so delicately. The MB2s handle this challenge with a degree of emphatic competence that I have heard from very few other transducers. Percussive attack is even and believable, from the extreme right hand to extreme left, while tonal density and detail, so uniquely complex when the damper pedal is not depressed, also stays credibly true to life. The low level of distortion and the dynamic agility of the MB2s allows notes to fade with a delicacy that at times had us holding our breath lest we missed the last few precious milliseconds of fade to black.

Early implementations of transmission line did not time particularly well. The development work done by Thomas and Loader in the days before they formed PMC resolved this issue, resulting the rear of the woofer being loaded by a column of air that is substantially 'stiff', such that woofer excursions are mirrored by air movement at the port mouth, much as if the two were physically connected. The result, as we hear it in the MB2s, for their size, is a low-end that combines fine timing with power





PMC's development and voicing experience that returns the equal or perhaps greater value: the 14 years that Thomas had running the engineering support team at the BBC's Maida Vale music studios, the 30 subsequent years at PMC, working with the world's best music and film studios, and musicians.

Reviewing sometimes brings surprises. During my time with the MB2s I experienced the acute discomfort of having not one, but two, fondly held views overturned. The first is that small speakers deliver an acceptable illusion of musical performance. The second is that only Class A amplification cuts it if we aspire to hear something approaching real life.

I was blindsided by the Bryston amplification loaned by PMC for the purposes of this review, as you can read opposite. As for the small speaker question; well I guess it's one of the conceits we all of us who are short of space or cash repeat to ourselves. As a position it is rather analogous to that of the indigent petrolhead who claims he or she never wants to own a Ferrari. Once heard, large speakers, such as the PMC MB2s, turn your head irrevocably, so profound is the dynamic energy, clarity, tonal density and visceral slam that they impose on the listening room.

The experience is overwhelming to the senses and emotions because, quite simply, it sounds so much more like the real thing than *anything* that can be conjured up by even the most exceptional bookshelf or a regular floorstander.

Live music has dynamic contrast, tonal density, native timing and dynamic power. Only when our audio system re-presents all four of these elements in good measure do we get a close facsimile of the live experience. Quality bookshelf or modest size floorstanding speakers might do three of the four, but the brutal truth is that only big speakers like the MB2s can do it all, and in particular deliver the relaxed yet overwhelmingly commanding room loading that close-to-believable reproduction requires.

Lest readers think that I am proselytising a level of expenditure that is quite beyond the reach of most of us, and a recipe for domestic chaos as well, I should point out two things: there's an active secondhand market that cuts RRP's down to more manageable size, and there's also the intriguing fact that the larger PMC speakers such as the MB2s work very well in rooms that would be regarded as much too small for large ported or infinite baffle designs.

Indeed, PMC has professional and domestic customers using MB2s and even the much larger BB5s in spaces not much bigger than 3.6 X 3.6 m. It's all down to the unique way that transmission line loads the room: if you can still open the door once a chair and the speakers are in place, they'll likely work.

HIFICRITIC
AUDIO EXCELLENCE

Specifications

PMC MB2se

Type Standmount loudspeaker

Drivers PMC 27mm
Sonolux soft-dome tweeter,
75mm soft-dome midrange
and 310mm Radial woofer

Inputs 3 prs terminals

Impedance 8ohms nominal

Sensitivity 90dB/W/m

Dimensions (HxWxD)
(Speakers) 870 x 380 x 535mm
(Stand) 377 x 374 x 502mm,
spikes add 50mm to height

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and extension in a way that might confound the expectations of listeners used to the on-its-toes bouncy bass of ported speakers, or the buttoned-up, not-so-low-end of infinite baffle designs.

I heard evidence of this low-end superiority and its attendant through mid- to upper-range clarity and low distortion pretty much no matter what recordings we played. Sometimes it is subtle, but if the low-end information is recorded at a high level, watch out! The MB2s are a properly dynamic transducer right across the audio bandwidth, able to make you jump by delivering transients with immense speed and power, and then next moment beguile and seduce with a deeply satisfying transcription of recorded micro-dynamic subtlety.

Their reproduction of upright bass, for example, had us purring with approval, so tonally, dynamically and rhythmically correct was it. Similar moments of delight were experienced throughout the audio band. It became clear too that the MB2s' dynamics, low distortion and seamless integration make them masters of symphonic recordings. They decoded the multiple layers in such complex material and presented them with clarity and integrity so that we were able to appreciate like never before the shifting patterns created by counter rhythms and different instrument sections.

It might be considered a very large amount of money to pay for a pair of speakers that are built of flat board. But the MB2s do not set out to woo with sexy curves. Instead, they are a product whose design and performance are driven by a unique singularity of purpose, and whose clever, valuable aspects are hidden from view. Some of these are physical: the complex structure of the transmission line and the massive bracing it provides; the quality of the drivers and the crossover. For all that though, it's