

Epos Epic 5

LOUDSPEAKERS

It seems amazing, but we had it straight from the horse's mouth. The new Epos Epic 5 is the first speaker in the history of the company to use a soft-dome tweeter. And that's not all. According to Mike Creek, the Managing Director of Epos (having purchased the company from Mordaunt-Short, which had in turn purchased it from its original founder, Robin Marshall) the new tweeter was designed 'in-house' at Epos' head office in Hertfordshire, in the UK. 'This is first soft dome tweeter used in the history of the company,' said Creek. 'By using virtual performance CAD simulation tools, we have achieved very high performance and a clean, open yet smooth sound quality which hits well above the tweeter's price point.' Obviously you don't develop a tweeter for just one model, so you will find the new tweeter in the Epic 1 and Epic 2 models as well, and Creek says it will also appear in future Epos designs that are, as yet, still on the drawing board.

THE EQUIPMENT

Since the tweeter is so new, let's take a look at it first. Its soft dome is 25mm in diameter and housed at the bottom of a small 'horn' that appears to have a soft coating—perhaps Nextel?—applied to its surface. The tweeter has a high-temperature voice coil that is suspended in ferrofluid to both increase the tweeter's efficiency and aid in cooling (to help dynamics), and is powered by a neodymium magnet. It's contained in an extremely unusual housing, made necessary because of the unique baffle/grille arrangement on the Epic 5... about which more later.

As you can see from the photograph, the Epic 5 is a 3-driver system, but it's actually a 2½-way design. The two bass/midrange drivers are 'specced' by Epos with a diameter of 179mm, but this is actually the overall

diameter of the basket. The more usual industry measurement of diameter (across the mounting holes) is just 167mm. The most important measurement from a speaker designer's point of view—the Theile/Small diameter, from which piston area (Sd) is derived, for use in speaker design packages—is 129mm. This puts the piston area of the driver at 131cm². However, because both bass/midrange drivers deliver deep bass, you need to double the piston area to 262cm². This means that if Epos had used just a single driver in the Epic 5, rather than two, it would have had to be around 232mm in diameter to deliver the same level of performance. The cone (which is actually not actually 'conical' but instead has a curved profile) is made from polypropylene, and has a 'bullet-shaped' polypropylene dust cap at its centre. The surround suspension is made from rubber (a superior choice of material for Australia, in particular, because the very high UV radiation levels in this country see cheap foam surround suspensions rotting

away almost before the warranty expires) and is fixed to the cone in a most unusual manner. It appeared to me that Epos has glued a thin layer of rubber to the periphery of the cone, and then glued the surround, in turn, to this layer of rubber. I've not seen this done previously, and am unsure of the reason, though I suspect it's to improve the durability of the bond. On my advance samples (hot off the press, so to speak), the glue beads were a little 'sticky' and so dust and small particles tended to attach to the glue beads, though the bond itself was super-strong.

The reasons Epos uses two drivers are many, but one such is that by doing this, it can use both drivers to deliver low bass, then roll off one of the drivers (the lower one, as it happens) to leave the upper one operating on its own at higher frequencies. This is what's meant by a '2½-way' design. It's a tried-and-true method, used by hundreds of the world's best-known speaker manufacturers. The driver itself is a fairly standard design, possessed of a pressed steel chassis, with a conventional spider arrangement (by which I mean that there's no under-spider venting for the voice coil).

The main driver magnet is 90mm in diameter and 18mm deep, but there's a second flux-cancelling magnet fixed to the rear that effectively constrains the flux field so that Epos can label the Epic 5 as being 'magnetically shielded.' Both drivers operate from the same ported enclosure, with the 140x83(Ø)mm port located on the rear panel, above the speaker terminal block.

The crossover for a 2½-way speaker is necessarily more complex than one for a standard two-way loudspeaker (even one that has three drivers), and this is reflected in the Epic 5's crossover network, which contains three five-watt metal oxide resistors (commonly known as 'metal film' resistors), two inductors (one iron-cored, the other air-cored), two audiophile-grade 100-volt polypropylene film capacitors and a single 10µF 100-volt bipolar electrolytic capacitor. Note that the use of expensive, high-tolerance (1%) metal oxide resistors is very unusual in any crossover network except, perhaps, in the most expensive loudspeakers. Most crossover networks use ordinary wire-wound, low-tolerance (5–10%) 'ceramic' resistors. The inductors are mounted at a distance from each other (though it's a very small printed circuit board (PCB), so they're still fairly close!) but they are cross-mounted so there can be no interaction between them. Unusually, the lead-out wire for the bass driver is not soldered to the PCB, but connected using spade/lug connectors. The lead-out wire itself is 18AWG Figure-8 (twin flex). The same grade wire is used for the midrange driver and the tweeter, but these wires are soldered to the PCB: It's only at the other ends of the wires that you'll find spade/lug connectors. The entire network is contained on one small PCB that's fixed to the rear of the rear speaker terminal plate. The PCB is so small that Epos couldn't actually fit all the components on the 'component' side, so one of the metal-oxide resistors is fixed underneath the PCB, on the 'solder' side. On the 'business' side of the terminal you'll find two pairs of gold-plated multi-way terminals, bridged by gold-plated shorting links, so you can bi-wire, or bi-amp, depending on your preference and ancillary equipment.

Anyway, let's now look at the unique baffle/grille arrangement on the Epic 5 I mentioned previously. The Epic 5 comes provided with two completely different loudspeaker

grilles. 'Out of the box', so to speak, it comes with the 'audiophile' version of the grille, which is a section of gloss black-painted MDF with three driver-sized holes. The edges of the holes are chamfered to reduce diffraction. This grille's defining characteristic is that there is no cloth covering, so when it's in place, you see only the drivers. (In motorcycle parlance, this would be known as the 'naked' version of the Epic 5!) However, if you'd prefer the more elegant, refined look of a conventional cloth grille, Epos also supplies one of these. To install it, what you have to do is first remove the 'audiophile' grille, using what Epos (presumably jokingly) calls a 'Grille-Removal Tool' (GRT). (I say 'jokingly' because the tool is really nothing more than a long, hollow metal rod with a nylon grip at one end, and a plastic nipple at the other.) This 'GRT', if inserted into a hole on the rear of the speaker, slides along a tube that links this hole to another one on the front baffle. When the tool emerges through the hole in the front baffle, it 'pops' the audiophile grille away from the front baffle. It's then simply a matter of fitting the cloth grille to the baffle... no tools required.

There are many advantages to this Epos 'dual grille' design. The primary one is that it means that if you want the cloth grille, it fits perfectly 'into' the cabinet, so it doesn't sit proud, like most grilles. This greatly enhances the appearance. Not that the Epic 5 doesn't look good with the audiophile grille fitted... in fact I think it looks fabulous. The cloth grille does afford a higher level of driver protection, however, which could be important if you have pets... or small children...

I am given to understand, however, that Epos actually intends you to use both grilles, fitting the 'naked' version for serious listening sessions, and the 'clothed' version when you're listening on a casual basis, or have friends around and want your speakers to look their best (about which more later!).

The costs Epos has incurred to provide this 'feature' are many. Firstly, for those who don't swap their grilles around at all, two of the four grilles will end up not being used, which means Epos will have built two grilles that will never be used. Then there's the cost of the 'grille removal tools' and the cardboard boxes they come in (you get one tool with each speaker!), but more significantly, there's the cost of

installing a completely airtight hollow tube running right through the cabinet, from back to front. There's yet another cost that's not immediately apparent, which is that in order to ensure the highest-quality veneer finish, Epos has had to design the bottom part of the front baffle so that it, too, is removable. This removable lower panel adds yet another manufacturing cost.

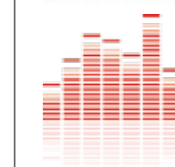
I have absolutely no doubt Epos ran a cost/benefit analysis before proceeding to

EPOS EPIC 5 Loudspeakers

Brand: Epos
Model: Epic 5
Category: Floorstanding Loudspeakers
RRP: \$1,500
Warranty: Five Years
Distributor: Epoz Pty Ltd
Address: Unit 24a, 176 South Creek Road
 Dee Why NSW 2099
 ☎ (02) 9450 0789
 ☎ (03) 9475 2455
 ✉ info@epoz.com.au
 🌐 www.epoz.com.au



- Incredible imaging
- Interchangeable grilles
- Sleek profile



- Storage of spare grille
- Cabinet complexity
- Grille removal tool

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Epos Epic 5 Loudspeakers should continue on and read the LABORATORY REPORT published on page 82. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.



Lab Report on page 82

manufacture, so it's likely that Mike Creek and Dave Berriman (currently Loudspeaker Project Engineer at Epos, but formerly Technical Editor at *Practical Hi-Fi* & *Hi-Fi Today Magazine*, and the author of the book *'Master Hi-Fi Loudspeakers and Enclosures'*) are right and I am wrong, but if it had been me, I would have offered the Epic 5 in two completely separate versions, rather than this 'dual mode' model. I would, however, offer the humble suggestion that if there's to be an Epic 5 MkII, that they consider putting four retaining clips on the rear of the speakers so you have somewhere to store the 'spare' grilles when you're not using them.

As for the cabinet, it's finished in a vinyl veneer (your choice of cherry or black ash), rather than a wood one, no doubt to try to keep costs down. The Epos Epic 5 cabinet is 915mm high, 210mm wide and 320mm deep, but it stands on a black plinth that you have to install yourself, which adds another 20mm of height and then, if you also use the supplied spikes, there's a further 45mm to be factored in. Each speaker weighs a shade under 20kg.

IN USE AND LISTENING SESSIONS

Like all rear-ported loudspeakers, the depth and balance of the bass will vary a little depending on how far out you place the speakers from the wall behind them, and what material that wall is made of. Even quite small distances can make substantive differences, so when you're positioning speakers in a room, do take your time and trial a great many variations before settling on any particular distance. In my main listening room, I found 40cm gave me the best balance and the most extended bass, so this is the position I used, even though I knew that if I moved the speakers a bit further out, I'd increase the depth of the sound stage (about which more later). With these Epic 5s, I decided the increased bass and improved balance were worth the tiny sacrifice.

If I were to play that 'describe the sound in a single word' parlour game with the Epic 5s, I'd say that single word would most definitely be 'smooth.' And if I were to add yet another descriptor, 'mellow' would be the second word that came to mind. I don't know who was responsible for 'voicing' the Epic 5s, but it's obvious that the ears of whoever did were steeped in the traditions of the greatest 'British' loudspeakers. Although I have no doubt that the new bass/midrange drivers are mostly responsible for this sound, I'd be ignoring the obvious if I didn't mention that that good ol' 'old technology' fabric dome would also play a significant part in this smoothness and mellowness, despite the fact that the old-tech dome is being driven by a decidedly high-tech (neodymium-boron) magnet. However, if you're now thinking

that the sound is 'typical' British, you'd be wrong, because despite being smooth and mellow, it does not achieve this by being laid back. Instead, there's a dynamic 'punch' to the sound, particularly across the midrange, that ensures that the sound is at the same time vibrant and exciting, with a real 'you are there' presence that will have you tapping your toe in no time at all. Although all this was clearly and audibly evident when I listened to the Epic 5s, I couldn't help but think as I was listening that what I was hearing was contradictory, that you generally get 'sweet and mellow' or 'dynamic and punchy', and that the one contra-indicated the other, rather than the both at the same time. So, whereas it used to be that you could choose 'either the one or the other', it now seems that we can have our aural cake and eat it too!

The even-better news is that you won't need a particularly powerful amplifier to drive these speakers either, because the Epic 5s seem to be able to make music even with modestly-powered amplifiers. That said, I wouldn't recommend using an amplifier rated at fewer than 50-watts per channel into 8Ω unless you have a particularly small room and/or if it's a valve amplifier, in which case I think you could drop this minimum requirement to 30-watts per channel. You can use a more powerful amplifier if you wish, of course, but I think you'll find that once you start getting over 50–60 watts per channel you'll have reached the 'dynamic' limit of the drivers so the sound will not improve with increased volume... indeed the opposite will be the case. Also, continued operation at very high output levels may see the highs become a little rolled-off if you run into the thermal limits of the tweeter.

Bass was deep and strong... in fact it was surprisingly extended, so that in the end it really matched the extension that's possible with larger drivers, and lacked only a little of the additional low-frequency volume levels that it's possible to achieve when using larger-diameter drivers in much larger, floor-standing cabinets...both attributes also requiring much larger injections of cash on your part, of course! Midrange clarity was outstandingly good: perhaps not quite up to the precision I'd expect from a dedicated midrange driver in a true three-way design, but outstandingly good nonetheless. However, for me, the real surprise was when I came to evaluate the sound with and without the grilles. I was completely flummoxed to discover that I actually preferred the sound of the Epic 5s when the grilles were on: in other words, the 'non-audiophile' option, which was the opposite of what I would have expected. This made absolutely no sense to me at all, but track after track, no matter what type of music I listened to, I preferred the quality of the sound when the cloth grilles


were in place. This was so counter-intuitive that I even set up the left and right speakers alongside each other, fed each with a mono signal, and then A-B'd between the two speakers, one with grille on, and the other with it off. Not only was there still a noticeable difference in sound, even in mono, but I still preferred the sound with the cloth grille—and I have no idea why. As Philip Henslowe (played by Geoffrey Rush) says (repeatedly) in that excellent film 'Shakespeare in Love': 'It's a mystery.'

There's even more good news, because I've left the best until last. The stereo imaging of these speakers is to die for... jawdroppingly good. And combined with all the Epic 5's other attributes, it means that when you're sitting in the 'sweet spot' in front of the speakers, it's as if you're in the best seat in the house, with the musicians spread right across the stage, side-to-side and front-to-back so you can 'hear' where every one is located so clearly that you can visualise them in your mind's eye. There's even image height as well, so when a trumpeter stands up to take a solo, you can hear the sound source move upwards. That's unheard-of performance in a sub-\$2,000 pair of speakers.

Speaking of pricing, I was interested that the next model down in the Epic range, the Epos Epic 2, has an RRP of \$1,200 per pair. I was interested because if you add in the cost of the recommended pair of stands for the Epic 2s (the Epos ST12i, at \$285), the amount you'd have to pay for stands and speakers comes to only \$15 less than the cost of the Epic 5s, which have a larger bass driver than that in the Epic 2 (not to mention there are *two* bass drivers in the Epic 5, vs only the one in the Epic 2) and don't require any type of stand at all. All other considerations aside, I'd say this makes the Epic 5 much better value than the Epic 2, and I think I'd stick with this assessment even if you already had a suitable pair of loudspeaker stands to hand. The difference in size does mean that WAF (Wife Acceptance Factor) might come into play when making a decision between the two models... or it would were it not for the fact that the Epic 5s (with their cloth grilles in place) look absolutely gorgeous! (At least they do in their Cherry finish... I wasn't so taken with the Black Ash.)

CONCLUSION

My reservations about the 'chameleon' nature of the Epos Epic 5's appearance aside, I have nothing but admiration for the way these speakers have been engineered and voiced, because it has resulted in outstandingly good sound quality, truly extended bass, and a stereo sound-field that is so deep—and so wide—that it simply must be experienced to be believed: At this price-point, I don't think I've heard its like before. What can I say?

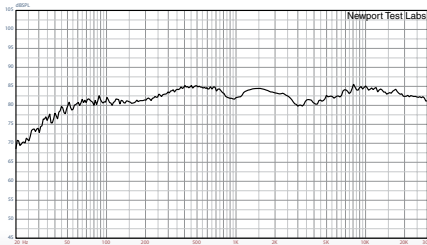
Wow!  **greg borrowman**

AD 25

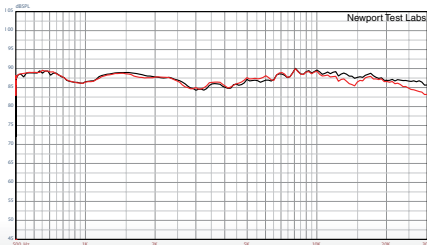
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TEST RESULTS

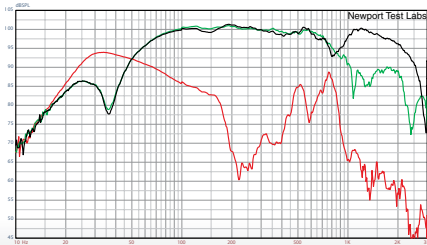
Newport Test Labs measured the frequency response of the Epos Epic 5 loudspeakers as extending from 46Hz to 30kHz $\pm 3\text{dB}$ —and that upper limit was the graphing limit, not the upper limit of the tweeter because, as you can see from the trace at the extreme right of the



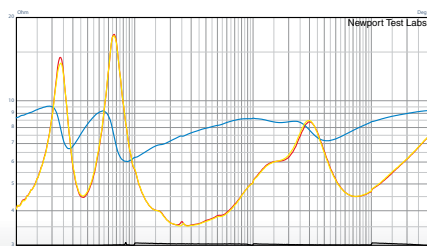
Graph 1. Frequency response. Trace below 600Hz is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise test stimulus with capture unsmoothed. This has been manually spliced (at 600Hz) to the gated high-frequency response, an expanded view of which is shown in Graph 2.



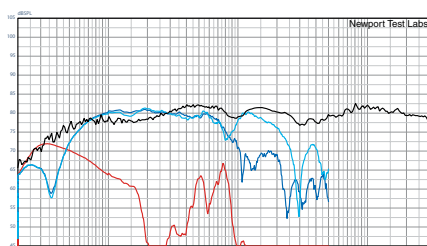
Graph 2. High-frequency response, expanded view. Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Grille on (Black Trace) vs Grille Off (Red Trace). Lower measurement limit 500Hz. [Epos Epic 5 Loudspeaker]



Graph 3. Low frequency response of front-firing base reflex port (red trace) and lower cone driver (green trace) and upper cone driver (black trace). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas. [Epos Epic 5 Loudspeaker]



Graph 4. Impedance modulus of left (red trace) and right (yellow trace) speakers plus phase (blue trace). Black trace under is reference 3-ohm precision calibration resistor. [Epos Epic 5]



Graph 5. Composite response plot. Red trace is output of bass reflex port. Dark blue trace is anechoic response of bass driver. Light blue trace is sinerresponse of bass/midrange driver. Black trace is averaged in-room pink noise response manually spliced to the gated high-frequency response at 600Hz. (See Graph 1). [Epos Epic 5 Loudspeaker]

graph, the tweeter is still going strong up at 30kHz, having barely rolled off past 20kHz. Self-evidently, that's an excellent result for the Epic 5, particularly in terms of bass and treble extension, but also as regards overall linearity. Although the graph is balanced overall, from the overall 'eye-shape' of the curve I would expect the sound to be a little forward in the 300Hz to 1kHz range, where the response is +3dB, and that +3dB bump around 10kHz would likely result in upper harmonics being perhaps a tad brighter than usual as well.


Graph 2 shows the high-frequency performance of the Epos Epic 5s both with the speaker grille (black trace) and without it (red trace). The differences between the two are minuscule below 10kHz and only 2.5dB over a tiny section of the band centred at 14kHz, then again above 20kHz, where the high-frequencies roll off when the grille is in place, but stay 'flat' without the grille.

As you'd expect in a 2½-way design, the response of the lower (exclusively bass) driver was different to that of the upper driver that acts as both a bass driver and a midrange driver. The lower driver's response is rolled off above 600Hz while the upper driver's response extends out to 2kHz before rolling off, albeit with a 'suck-out' at 800Hz. Below 600Hz, the response of both drivers is almost identical, and also excellent.

The linearity of these drivers between 100Hz and 600Hz is exceptionally good, varying by no more than a single dB either side of the reference. Response rolls off very smoothly below 100Hz to a minimum of 36Hz. You can see that the port's maximum output is a few Hz lower at around 32Hz. The port's output rolls off smoothly to 200Hz, but some resonances and 'acoustic breakthrough' are evident at 300Hz, 500Hz and 800Hz.

These resonances are also visible on the impedance traces of Graph 4. Although the Epos will be a relatively easy load for any well-designed amplifier, its impedance does fall below 4Ω between 150Hz and 650Hz, so it would be as well to use an amplifier that will happily deliver at least its rated

output into 4Ω loads. The phase angle shifts between +40° at 20Hz and -45° at 80Hz, which is noteworthy, but not excessive. What is most impressive about the Epos is the almost-perfect matching between the left and the right speakers. This matching is so good that it were it not for a few glints of red ink (left channel) appearing briefly from under the yellow trace that is the impedance of the right speaker, it would look like only a single speaker's impedance had been graphed. To me, this is an indicator not only of the quality of the components inside the Epic 5, but also of Epos's quality control procedures. As for the 'nominal' impedance, I'd agree that it's 4Ω, exactly as claimed by Epos.

System efficiency was very high. Newport Test Labs' figure didn't quite match the 92dB SPL claimed by Epos, but it was pretty close, at a measured 90.3dB SPL, and since NTL's test methodology always results in significantly lower figures than the methods used by speaker manufacturers, the test result shows that the Epos Epic 5 is a very efficient design... up there in the top two per cent of the speakers the lab has tested over the last five years.  Steve Holding

